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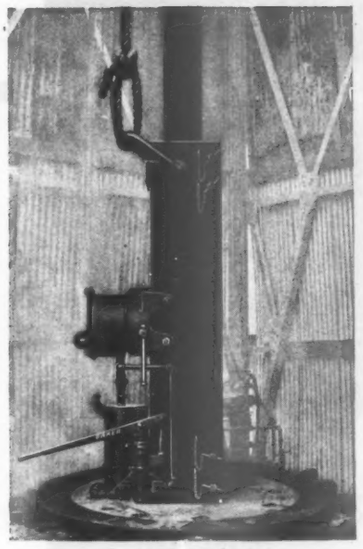
SAVE TIME, MONEY AND UNNECESSARY HANDLING

By Straightening Kellys and Drill Pipe The Modern Way



Baker Kelly Straightener in position on rotary table

WHILE THEY ARE SUSPENDED IN THE DERRICK

It's Easily and Economically Done with a BAKER PORTABLE HYDRAULIC KELLY AND PIPE STRAIGHTENER

This highly efficient and easily operated device utilizes the principle of the hydraulic ram, applying the force built up by a manually operated pump to the bend in the Kelly, Drill Collar, or Drill Pipe, as it hangs suspended in the derrick.

COMPLETELY PORTABLE

The entire unit is completely portable (weighing only 1200 pounds), and can easily be transported to the well on a small "pick-up" truck or trailer and set up on the rotary table by means of the catline.

ADVANTAGES OF STRAIGHTENING AT THE WELL

Even though shop facilities may be close at hand, there are a number of important advantages in straightening at the rig—advantages that result in substantial savings in time and money. Probably more Kellys are bent during transportation and in being laid down and picked up than from any other cause. Frequently a Kelly that has just been straightened will again be bent during the process of transporting it back to the well, rolling it off the truck and dragging it into the rig.

When the BAKER KELLY STRAIGHTENER is used, the job is done right on the rotary table with the Kelly hanging in its normal position. The hazards involved in transportation and handling are entirely eliminated as are also the cost of transporting the Kelly to and from the well, plus the time and expense entailed in removing and replacing it. In foreign or isolated fields, however, the Baker Kelly Straightener is considered indispensable as the cost and loss of time involved in transporting a bent Kelly or drill pipe to and from a distant shop makes it a serious matter.

CAN BE ADAPTED FOR HORIZONTAL PIPE STRAIGHTENING OPERATIONS

By the attachment of a simple, easily installed device the Baker Kelly Straightener can also be adapted for efficient, horizontal pipe straightening work. The same high efficiency and portability is maintained, plus the advantage of being able to utilize the Straightener for a wide variety of pipe straightening operations around the field and in the shop.

Send today for Complete Details and Prices

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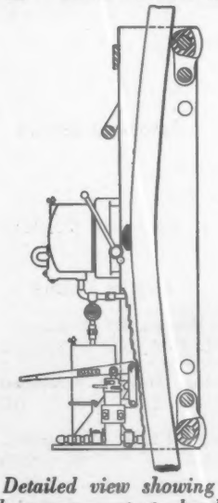
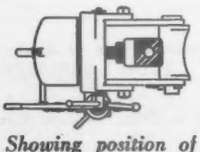
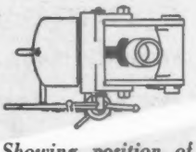


Detailed view showing how ram contacts bend in Kelly or Drill Pipe



Showing position of Kelly in Straightener during operation



Showing position of Drill Pipe in Straightener during operation

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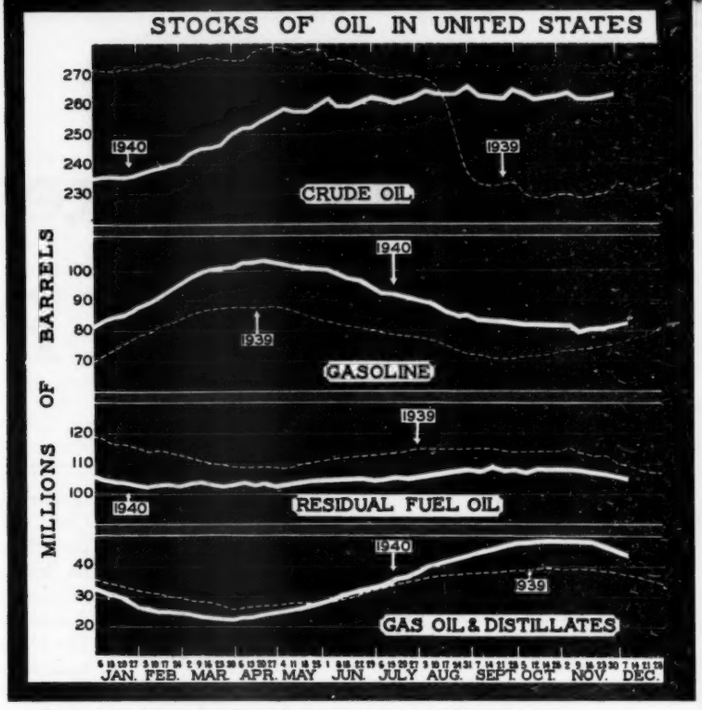
BAKER PORTABLE KELLY AND PIPE STRAIGHTNER

Trends

Smaller Refiners In Texas Ask Showdown In Crude Oil Market



THE action of independent refining organizations in reducing their posted prices for crude oil in several fields of Southwest Texas has precipitated another crisis in Texas markets for crude oil and finished products. The lower postings of the coastal companies did not come as a surprise. Developments over the past year have brought many market problems to these companies. First, they lost their export demand to which several of these companies looked for practically all of their sales. Then, high tanker rates restricted the coastwise movement of their products. The decline in these rates during late summer was helpful but over the past few weeks, they have jumped so they are again at the high levels prevailing the early part of the year.

It is conceded that the present serious situation in Texas is not confined to the smaller refining organizations. The extremely low open-market quotations on finished products—especially in the case of gasoline—have brought similar conditions in wholesale and retail markets of direct importance to the large refiners and distributors. In this connection an effort was made last week to restore posted dealer prices for gasoline in Texas in line with crude-oil and refinery costs. While most of the large and small distributors met the advances others did not and at the first of the week there was still a question as to whether these higher schedules would be maintained.

In some quarters it is felt that unless permanent remedies are found for conditions prevailing in refiner markets, some of the larger refiners and crude buyers in Texas will meet the lower postings of the independent companies.

All of the unwanted market developments of the past week and throughout the year, directly or indirectly, have been tied in with enforcement of conservation and prora-

CRUDE PRODUCTION *3,602,000 bbl. daily average—up 276,275 bbl. One year ago 3,829,590 bbl.*

CRUDE STOCKS *262,679,000 bbl. as of November 30—up 999,000 bbl. One year ago 234,161,000 bbl.*

GASOLINE STOCKS *81,062,000 bbl. as of December 7—up 778,000 bbl. One year ago 78,162,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *105,353,000 bbl. as of December 7—down 1,265,000 bbl. One year ago 109,290,000 bbl.*

GAS OIL AND DISTILLATES *44,305,000 bbl. as of December 7—down 1,907,000 bbl. One year ago 36,946,000 bbl.*

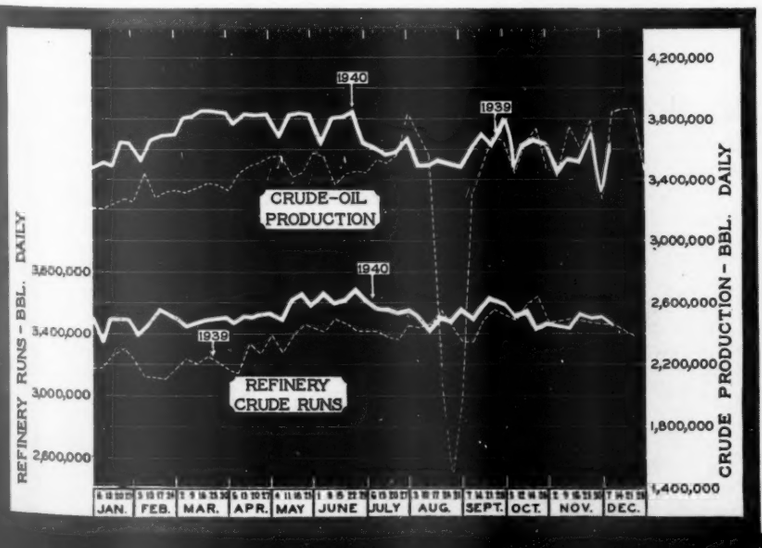
REFINERY RUNS *3,460,000 bbl. daily week ended December 7—down 50,000 bbl. One year ago 3,460,000 bbl.*

DAILY AVERAGE PRODUCTION FOR WEEK

	Dec. 7, 1940	Bur. Mines Dec. est. of demand	December state allowables	Nov. 30, 1940
Arkansas	68,705	66,410	70,176	64,670
California	597,250	593,900	571,000	595,750
Eastern states	105,700	106,400	.....	105,200
Illinois	332,045	363,600	.....	330,970
Kansas	183,100	188,400	192,400	196,650
Louisiana	289,155	280,300	287,246	282,310
North Louisiana	*68,705*	.....	.....	*63,460*
Louisiana Gulf Coast	*220,450*	.....	.....	*218,850*
Michigan	45,125	47,100	44,000	46,350
Mississippi	17,185	13,900	.....	15,985
Nebraska	3,250	2,000	.....	3,200
New Mexico	103,420	100,600	104,000	103,410
Oklahoma	419,725	422,600	390,000	403,500
Rocky Mountain states	92,740	98,100	.....	88,380
Texas	1,344,600	1,277,000	1,316,660	1,089,350
East Texas	*374,840*	.....	.....	*298,700*
West Texas	*216,655*	.....	.....	*178,850*
North Central Texas	*144,850*	.....	.....	*134,400*
East Central Texas	*81,295*	.....	.....	*72,850*
Texas Panhandle	*80,760*	.....	.....	*50,450*
Texas Gulf Coast	*354,100*	.....	.....	*278,650*
Southwest Texas	*92,100*	.....	.....	*75,450*
Total United States	3,602,000	3,560,310	.....	3,325,725

tion policies in the state. It is contended that an "about-face" in several practices of the past is imperative, coupled with the adoption of a long-range policy in regard to conservation regulations around which a stable market for crude oil and finished products can be made effective.

Developments in Texas have brought uncertainty regarding future trends in New Mexico and Louisiana. Outside of these three states, developments of the past week, east of California, were favorable. Demands for all grades of fuel oils are strong and there have been fractional advances in prices in several refining areas. The high tanker rates, which are part of the trouble in Texas and southern Louisiana, have served to tighten crude markets in parts of the Mid-Continent and Illinois. It is reported that pipeline movements of crude to East Coast refineries are to be resumed. Advances in tank-car and dealer prices for finished products in the eastern part of the United States have materialized as a result of the high tanker rates.


REFINERY RUNS - BBL. DAILY
CRUDE PRODUCTION - BBL. DAILY
CRUDE-OIL PRODUCTION
REFINERY CRUDE RUNS
1940
1939
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Texas Market Crisis May Bring Changes in Proration Policy

By NEIL WILLIAMS

Crude-price reductions in the Corpus Christi, Tex., area and the emergency proration hearing December 11 at Austin imply that a showdown between regulators and operators is imminent. Herein, the Gulf Coast district editor of The Oil and Gas Journal sets the stage with props that will silhouette coming events. Criticism of the Railroad Commission has been growing in volume and vituperativeness.

HOUSTON, Tex., Dec. 10.—Threatened with a general open disruption of its crude market structure, now cringing under pressure of long-depressed refinery-product prices at the Gulf Coast and weakened by increasing competition in the market of "cheap" oils, the Texas petroleum industry this week is being moved to action in attempting to correct conditions held responsible. Events of the week are giving rise to the belief among some leaders that the long-awaited "showdown" in the policies of administration of Texas proration and conservation is at hand.

Climaxing developments of the week in the Texas situation was the calling by the Railroad Commission of an emergency state-wide proration hearing in Austin for Wednesday, December 11, to reconsider nominations of crude that were made at a state-wide hearing less than a month ago. At that hearing, on which proration orders for a 2-month period were to be based, sworn nominations totaled approximately 1,700,000 bbl., but since the hearing, with a net daily average allowable considerably under that figure, the state still is faced with an increasing volume of crude being offered and moved from a number of fields at prices substantially below prevailing posted levels. This, in the eyes of observers, reflects the existence of excessive production over "legitimate" market demand.

Action of the Railroad Commission in calling the new hearing followed closely reductions, led by Republic Oil Refining Co., of posted crude schedules in various fields of the lower Gulf Coast district and Southwest Texas. The cuts, met by various other independent companies, including Barnsdall Oil Co., Amsco Pipe Line Co., M. A. R. Pipe Line Co. and Reco Oil Co., were interpreted as the forerunner of impending general downward revisions of posted schedules over Texas. However, in view of the move by the Railroad Commission, with probabilities that further reductions in state allowables will be made, it is now believed further spread of market adjustments has been averted for the time being.

Reasons for Reductions

Republic Oil Refining Co. gave as its reasons for reducing its posted prices the unfavorable refinery-market situation on the Gulf Coast which for some time has held prices for refined products below normal and much less than actual cost, and the availability of substantial quantities of crudes from other areas to competitors at considerably lower cost than the prices it had tried to maintain. In its announcement of the reduction, the company pointed out that during the past year, although there had been no reductions in crude costs, based on posted schedules, the Gulf Coast market for 72-74-octane gasoline, for example, had dropped from above 6 cents to 3.50 cents; the price of kerosene had been cut from 4.50 cents to 3.75 cents; that of No. 2 heating oil from 4 cents to 3.25 cents, and bunker fuel oil from 95 cents to 80 cents. A summary of the situation was given in the statement, as follows:

"The posted field prices of Gulf Coast crude, as you are aware, have been fairly constant for a long period of time; however, the Gulf Coast prices for refined products have been below normal and much less than actual cost to the Gulf Coast refiner for a long period of time.

"In the hope that this situation would right itself we have continued the policy of paying higher prices for Gulf Coast crudes than could be realized from the products, although this company has been offered Gulf Coast crudes much lower than our posted prices. It is obvious to all that such a policy by a manufacturer cannot be continued indefinitely.

"As you no doubt are aware, East Texas and some West Texas crudes at lower costs are refined on the Gulf Coast in competition with Gulf Coast crudes. Crude oil in the form of recycling-plant distillate is being sold f.o.b. Gulf Coast at prices under field-posted prices of crude oils (subject to proration orders), plus transportation of such crude, according to what we consider reliable information. East Texas and West Texas crudes are being sold on the Gulf Coast in competition with the higher-priced Gulf Coast crude, and East Texas crude in particular has been available at the Gulf Coast at prices considerably under field-posted prices, plus published transportation tariffs, which situation also applies to a very few Gulf Coast crudes.

"We regret very much the necessity of reducing our posted field price for Gulf Coast crudes and it is our hope and belief through the attention, consideration and cooperation of all interested parties that the prevailing abnormal conditions will be corrected and that refined products manufactured from Gulf Coast crudes will soon bring prices commensurate with their true value, thus making it possible for this company to increase its posted field price for crude."

The new prices posted by Republic represented reductions ranging up to 20 cents, according to gravity. For fields in the immediate Corpus Christi district the new schedule provides for a base price of 93 cents, as before, for 20 to 20.9-gravity crude, with a 1-cent differential for each gravity up to 40 and above at $1.13. The old schedule called for a 2-cent differential with a top price of $1.33. For the Mirando type producing fields, the same adjustment in differential is made with prices 5 cents lower than that of the Corpus Christi area fields.

Although in the Republic statement, particular reference was made to the competition of West Texas and East Texas crudes, it has been known that crude from a number of Gulf Coast fields, particularly in the Corpus Christi area, have been moving for some time under posted prices, in some instances as much as 30 cents. It is also generally known that some of these fields, which have made the district a disturbing factor in the state picture, have been among those granted extra allowables by the Railroad Commission because of special market-demand claims, and which have been responsible for some of the criticism which has been directed against the Railroad Commission for its past policies in the matter of granting of special allowables and shutdown exemptions.

In an effort to eliminate some of the disparity that exists in the Texas market between crude and refined product prices, the Texas Co. early the past week advanced its posted dealer prices on gasoline generally throughout the state from a half to 2 cents a gallon. This action, effective December 3, was followed the following day by most all other major refining companies. Since then, however, one of the large companies that joined the advance has returned to its former prices.

W. S. S. Rodgers, president of the company, who personally announced the increase while on a trip to Houston, stated this was a move to bring gasoline prices more nearly into proper ratio with prevailing crude prices. He added that the gasoline prices still are too low to support present crude prices in the state, but that if throughout the winter the present lowered gasoline stocks can be maintained and crude stocks, particularly in the Southwest, can be reduced, price inequities can be improved or eliminated.

High Tanker Rates

From a refinery-market standpoint, however, particularly as it affects the independent and non-integrated companies on the Gulf Coast depending on the chartering of outside bottoms for the movement of their products, the high tanker rates now in force from Texas, as well as Louisiana ports, to the Atlantic seaboard are serving as a check against material improvement of prices at refineries. Companies which own their own fleets of boats, on which costs of operation are more or less constant over a period of time, may be in a position to offset to some extent the low Gulf Coast quotations by the higher prices received in the Atlantic seaboard market by reason of the tanker-rate increases, but the other companies cannot expect to get higher prices at the Gulf until the strengthening on the East Coast is sufficient to absorb entirely the higher transportation cost, which so far has not been the case.

The extent of increase in transportation costs is indicated in the following tabulation of average tanker rates from Texas ports to the Atlantic seaboard by weeks since the lows of last summer:

TANKER RATES IN CENTS PER BARREL

Week of—	Heavy fuel and crude	Light crude	Gasoline	Kerosene	No. 2 fuel
Sept. 17	20	18	18	19	20
Sept. 24	20	18	19	20	21
Oct. 1	21	19	21	22	23
Oct. 8	28	26	25	26	27
Oct. 15	28	26	25	26	27
Oct. 29	36	30	36	38.5	41
Nov. 5	43	38	40	42.5	45
Nov. 12	45.5	40	48	51	54
Nov. 19	51.5	45	57	61	65
Nov. 26	48	42	50	53	56
Dec. 3	48	42	65	?	75

So acute has become the situation for the independent and nonintegrated refining companies on the Gulf Coast, which situation is a more or less direct factor in the entire Texas picture, that the Gulf Coast Refiners Association, a group of 10 independent Gulf Coast refining companies, held an emergency session at Houston the past week and adopted resolutions authorizing officers of the association and counsel to "lay before appropriate government agencies, including the attorney general and agencies regulating shipping, the plight of the Gulf Coast refiners with respect to tanker rates, and other factors which allegedly constitute restraints upon trade affecting members of the association."

Attention of Texas operators also is being directed to the increasing volume of production from expanding recycling and distillate-plant operations. This production, which now totals between 23,000 and 24,000 bbl. daily, has reached a point that it is becoming an important factor in the market. Not classed as oil wells, and with gas output being returned to the producing horizons without waste, no production restrictions are imposed on wells embraced in these operations, although the products from these plants are in open competition with the products from crude oil.

The latest report of the Railroad Commission covering distillate operations in the state, which has just been released, listed 31 distillate-recovery and recycling plants running in October, with a total of 229 wells on production. One additional plant has been placed in operation since then, and a number of other major plants are now under construction or are projected that will materially boost the present daily distillate production. Of particular significance in connection with the increasing distillate production is the fact that the distillate consists largely of gasoline, and in terms of crude required to produce an equivalent volume of gasoline, the distillate displaces crude production considerably in excess of its own production. Distillate gasoline has a high lead susceptibility and blended with a small percentage of crude-produced gasoline, gives a product comparable with most house brands of gasoline at substantially less cost.

Expect Allowables Reductions

As an immediate result of the emergency hearing Wednesday it is generally believed that further reductions in allowables will be ordered if it is established production is in excess of actual market demand. Assurance already has been given by Ernest O. Thompson, member of the commission, in a statement wired the Interstate Oil Compact Commission at its recent meeting, that production of Texas would be kept within the limit of the Bureau of Mines' estimate of market demand, which for the month of December is 1,277,000 bbl. daily.

In the current proration order, effective December 1, the Railroad Commission set the gross daily allowable at 1,754,726 bbl., which was in line with sworn nominations of buyers. However, considering 9 shutdown days ordered for December, it was figured the net daily average allowable would be limited to about 1,316,657 bbl., which would have been about 39,657 bbl. above the Bureau of Mines estimates, and with allowance for the normal underproduction of about 3 per cent this excess would have been further cut to close to the bureau's figures.

Under this order, net daily average production the past week, as estimated by the Railroad Commission, totaled 1,353,848 bbl., which was 36,233 bbl. over the bureau's estimate. Figures take into consideration the normal 3 per cent underproduction. Actually the allowable production for the week was 76,848 bbl. above the bureau's estimate.

Efforts of the Railroad Commission to hold Texas production within the limits of the Bureau of Mines estimates of market demand in the past have been confronted with numerous complications. Not only is the proratable oil greatly limited by marginal-well-law provisions which apply to a substantial portion of the production, but also in the allocation of proratable production the commission during the course of a proration period usually is called upon to grant numerous special allowable increases and exemptions from shutdowns. These grants, together with new production brought in, usually accumulate to boost the allowable production during a proration period materially above figures set at the opening of such a period.

Special Allowables on Increase

Until the past month, the number of fields granted special high allowables or exemptions from shutdowns has been steadily increasing each month. This has been blamed by some leaders in the industry as being one of the main disturbing factors in the present proration program. It not only is claimed that the constant changing and variances in field and state allowables cause uncertainty, but also that the individual increases tend to create inequities and discrimination among fields and encourage selective buying to the end that unstable conditions result. It also is charged that some of the crude that is upsetting the stability of the market can be traced to fields having special allowables.

In the granting of special allowables to individual fields, however, the commission has taken the position that when evidence is presented to it of a bona fide market and the crude can be produced without waste it is compelled to grant the necessary allowable. This position is recognized by most leaders in the industry although there are some that charge the commission has been overly lenient in the practice.

The current proration schedule, effective December 1, has greatly reduced the number of fields exempted from shutdowns, and so far fewer special allowables are being asked or granted.

There also is increasing agitation on the part of some of the larger companies for the adoption of some more uniform basis, or "yardstick" for allocation of allowables among fields.

Cause of Disturbing Conditions

These companies claim that the lack of any standard method or practice is resulting in numerous inequities among fields and that this is responsible for some of the disturbing conditions that now exist. Other operators point out, however, that the matter of establishing any standard upon which all could agree upon as being equitable to all concerned might be a difficult, if not impossible, undertaking.

The move which gained considerable momentum several weeks ago to obtain a new oil and gas commission, appointive by the governor, to replace the overburdened Railroad Commission, an elective body, apparently is losing some ground, in lieu of a desire on the part of the industry to see what will be done and what policies will be adopted by the Railroad Commission following its reorganization after the first of the year with Olin Culberson as a member to succeed Lon Smith, who retires at that time.

Mr. Culberson was elected to the position with wide support of the industry, and it is general opinion that through his efforts, the Railroad Commission, with the cooperation of the oil industry, will be able to correct most of the conditions that are disturbing the outlook. However, it is recognized that more than temporary or local adjustments may have to be made, taking into consideration factors that are disturbing the refinery-market situation as well as those immediately affecting crude-production regulation.

Main turning basin at Corpus Christi, Tex., looking west

Compact Body Seeks Greater Coordination Among States

By H. STANLEY NORMAN

Motor-fuel demand in 1941 will be 6 to 9 per cent greater than this year and fuel requirements will advance 10 per cent, oil men attending the compact meeting were told by A. G. White of the Bureau of Mines.

Text of the address on conservation concepts by Joseph E. Pogue of New York, vice president of the Chase National Bank, appears on Page 19.

RECOMMENDATIONS will be spread before the Interstate Oil Compact Commission at Oklahoma City, Okla., December 30, that, if adopted, will assure maximum recovery of petroleum at the least cost, within reasonable limits, in all producing states.

Decision of the commission at Tulsa last week to seek a 2-year extension of the interstate oil compact in its present form magnifies importance of the legal committee report scheduled December 30, which will provide the pattern for complete coordination of conservation efforts. Commitments of the commission to a policy of nonencroachment on the police powers in the producing states leaves the problem of interstate-conservation harmony dependent on adoption of nearly uniform regulatory laws.

Olin Culberson, Austin, Texas railroad commissioner-elect; F. R. Frye, Lansing, petroleum engineer, geological survey division, Michigan Department of Conservation, and T. A. Morgan, Wichita, director of conservation, Kansas Corporation Commission, chairman of the committee on regulatory practices

The suasive powers of the Compact Commission and actions of the individual producing-state legislatures remain the only medium through which fundamentals of petroleum conservation may be implemented.

Sound proration formulas should take into account either the acreage or the recoverable reserves together with bottom-hole pressure, the engineering committee reported. Inequities which may exist between pools within a state and between individual tracts within a pool are largely the result of faulty proration practices, the engineers declared.

Frustration of some who had advocated a fight for more authority in the compact to deal with the interstate oil problem was partially offset by a forecast that gasoline demand in 1941 will be 6 to 9 per cent greater than this year and that fuel-oil requirements will increase about 10 per cent. In predicting approximate demand, A. G. White, of Washington, D. C., chief of the Petroleum Economics Division of the U. S. Bureau of Mines, cautioned that the increase will have little impact on the industry until April because of the abnormalities in the first quarter of this year. Complexity of interstate conservation is largely a matter of discord in regulations and their application. This conclusion was reached by the committee appointed to consider redrafting of the compact headed by J. C. Hunter of Abilene, Tex., representative of Governor O'Daniel. Authority extended by the compact to the signatory states is sufficient, Mr. Hunter's committee decided, if laws and their administration are coordinated.

There is no authority in the current compact, which expires of its own terms September 1, 1941, to force coordination and none will be sought. There is nothing obliging states to join the compact, or once in to remain in, and the committee decided against inclusion of a compulsion clause. Any effort to force producing states into the compact would fail in Congress, it is felt, and would invade sovereignty of these entities, a concept frowned upon by the committee and commission.

Moral Suasion

The Compact Commission gave evidence of applying its powers of moral suasion more vigorously in the future. A committee was authorized to investigate the question of financing an enlarged program. Provision for financing would be the first step necessary in enlargement of commission influence in member and nonmember states. The finance committee probably will be asked to submit a plan at the Oklahoma City meeting for participation of all member states in the support of a central organization. Voice of the compact, according to hotel-lobby criticism, is muted by the lack of funds with which to plant the sound conservation principles in the places where they will germinate.

Gov. Leon C. Phillips, of Oklahoma, was reelected chairman of the commission. Other officers reelected were Andrew F. Schoeppel, chairman of the Kansas Corporation Commission, Wich-

Eugene A. Stephenson, petroleum engineering department, University of Kansas, Lawrence, Kans.; E. DeGolyer, of Dallas, Tex., chairman; A. Andreas, New Mexico state geologist, Santa Fe, and W. H. Carson, dean of the school of engineering, University of Oklahoma, Norman, Okla., all members of the engineering committee

ita, first vice chairman; P. J. Hoffmaster, Lansing, director of the Michigan Conservation Commission, second vice chairman.

In predicting a substantial increase in the domestic demand for petroleum next year, particularly in the last three quarters, Mr. White warned that the greatest pressure will emanate from requirements for residual fuel oil. Residuals, Mr. White said, are more sensitive to industrial activity than any other petroleum product. Consequently the heavy fuels will be the first to feel the impact in producing defense materials. This condition poses a particular problem for the industry in light of current statistics which show excessive gasoline and distillate stocks and inadequate supplies of residual east of California. Production of the probable increase in residual requirements from domestic crudes, Mr. White declared, will aggravate the unbalance in gasoline and distillate fuels.

Another factor contributing to Mr. White's forecast of an increase in imports of petroleum to 90,000,000 or 95,000,000 bbl. in 1941 is the pressure of Caribbean oil. The war has closed many European markets to Caribbean petroleum and the surpluses backed up thereby are exerting constant pressure on markets. Some Caribbean oils yield 80 per cent residual fuel. Therefore, they are attractive solutions to the domestic problem of supplying relatively larger quantities of residual without the accompanying disadvantage of adding materially to excessive gasoline and distillate stocks.

Economics Out of Tune

Never has there been a time, Mr. White said, when current economics in the petroleum industry were so out of tune with the probable future. The Bureau of Mines statistician then proceeded with the forecast that domestic gasoline demand will increase at least 6, probably 7 and perhaps 8 or 9 per cent in 1941. The growth of aviation-gasoline demand and the uncertainties surrounding this product add to the difficulty of making accurate forecasts. Mr. White explained that it is not certain how much aviation fuel will be required or what type will be stored. Undetermined to date is whether the aviation fuel will be stored as a finished product or whether the ingredients will be held separated and blended as needed.

Storage of approximately 3,000,000 bbl. of aviation gasoline for military purposes has been recommended but this figure is subject to revision in light of the speed with which planes are delivered and intensity of the pilot-training program. Mr. White said about 1 or 2 per cent should be added to demand for military needs.

An increase in crude-oil production during the first quarter of 1941 would be unwise, Mr. White believes. The industry has on hand 9,000,000 to 10,000,000 bbl. of distillate fuel that should be liquidated over the remainder of the winter and the additions to motor-fuel stocks should be modest to total about 83,000,000 bbl. on March 31, according to Mr. White's prediction.

The caution against increases in first-quarter operations did not detract from the predicted increment in demand for the last three quarters of 1941. Mr. White advised a gradual approach to the matter of supplying next year's increase in ratio to growth of demand. Furthermore, the increase of about 45,000,000 bbl. in stocks of crude and refined products in 1940 should apply to the higher demand predicted in 1941. This means that the increase in crude demand will be less than half that for all oils.

The industry has absorbed most of the shock in curtailment of exports, Mr. White predicted. He anticipates that exports may decline to approximately 114,000,000 bbl. in 1941 compared to 128,000,000 bbl. this year. If imports increase to 95,000,000 bbl., the domestic industry will still have a net export balance of nearly 20,000,000 bbl. The net exports were 130,000,000 bbl. in 1939 and at the rate of 46,000,000 bbl. this year.

Crude demand in the first quarter of 1941 will be around 3,600,000 bbl. daily. Fitting the excessive stocks of some products into the picture indicates, Mr. White said, that runs to stills should be held around 3,500,000 bbl. daily in January, 3,550,000 bbl. in February and 3,600,000 bbl. in March.

An increase of 7 per cent, or approximately 95,000,000 bbl., in demand for all oils was the conclusion reached by Mr. White. There will be an increase of 5 to 6 per cent in gasoline demand during the first quarter; this may be extended later to 7 or 8 and even 9 per cent. Domestic demand for distillate fuel oils may increase 5 or 6 per cent over the year, but curtailment of exports and the improbability that this winter will be as severe as last shadows the outlook for light burning oils. Residual demands are apt to pyramid sharply, particularly during the last half of next year.

Oil Imports Rise

Frank Buttram, of Oklahoma City, president of the Independent Petroleum Association of America, presented the report for that organization's committee on balancing supply with demand. The report concluded that production of 3,400,000 bbl. during the first quarter of 1941 would be desirable. The committee calculated that its recommended production figure would bring the industry to March 31 with 88,000,000 to 90,000,000 bbl. of gasoline in storage. The production recommended was split 550,000 bbl. daily to California and 2,850,000 bbl. to remainder of the country.

Attention was called to an increase of 84 per cent in the petroleum imports for the first 10 months

(Continued on Page 97)

Hiram Dow, Artesia, N. M.; J. C. Hunter, Abilene, Texas representative on the compact, and Andrew F. Schoeppel, Wichita, Kansas representative and a member of the Corporation Commission, composing the committee on redrafting the compact

Jim Hamill, assistant, and Earl Foster of Oklahoma City, Okla., who is conservation attorney for the Corporation Commission and chairman of the compact's legal committee. Jack Jones, attorney for the Kansas Corporation Commission, is seated at Mr. Foster's left and R. E. Hardwicke, Fort Worth, Tex., attorney, is at the extreme right

SPARKS . . . FROM THE NEWS

INCREASING THE PURSE: Offshore drilling continues to bring in new fields. The fight between the states and the federal Government for this oil is for increasingly large stakes.

CONSULT THE RECORD: The Cole committee is about to conduct hearings to determine the industry's position in relation to national defense. This comes after everyone else is convinced that the industry is fully prepared.

A PROBLEM IN BALANCE: A government report shows the industry in 1941 will have one of the largest demand increases in its history. The catch lies in the fact that next year's increases will have to be balanced against this year's excesses.

MORE CARS, MORE GASOLINE: The sale of 4,188,934 cars and trucks the first 11 months of this year—28 per cent ahead of 1939—is a highly favorable development for refiners. November factory sales were the highest since June 1937.

LOOKING TO 1941: One company has placed an order for 8 million 1941 road maps. If placed end to end, they would extend from New York to Los Angeles. Incidentally the order gives employment for 300 skilled workers for a 7-month period.

IMPOSSIBILITIES DO OCCUR: The impossible sometimes happens: High-pressure gas has been found in salt in Michigan. The drill has wrecked another theory.

CAT-LIKE FIELDS: The Rumanian oil fields and refineries have now been destroyed for the third time. Six more destructions may make it final.

PRINCIPAL NEED: Congress and the oil states will be asked to continue the Interstate Oil Compact, as is. Investigation showed that what the compact needs is not more power but the proper use of present powers.

SPILLED MILK: The Texas Railroad Commission now has to go back and do what should have been done in November—fit allowables from new completions into the demand puzzle.

MORE NEUTRALS: Pennsylvania refiners are studying manufacturing methods which will convert bright stocks into neutrals. This is the reverse of the usual objective but it reflects the current price relationship between these two classes of lubricants.

NEW ENTHUSIASM: Thousands of jitney planes are being built to satisfy an unexpected demand for low-cost, two-seated ships. That is the way the automobile industry got its start and that in turn gave impetus to the growing oil industry. Every encouragement is being given the development because it will make more people air-minded.

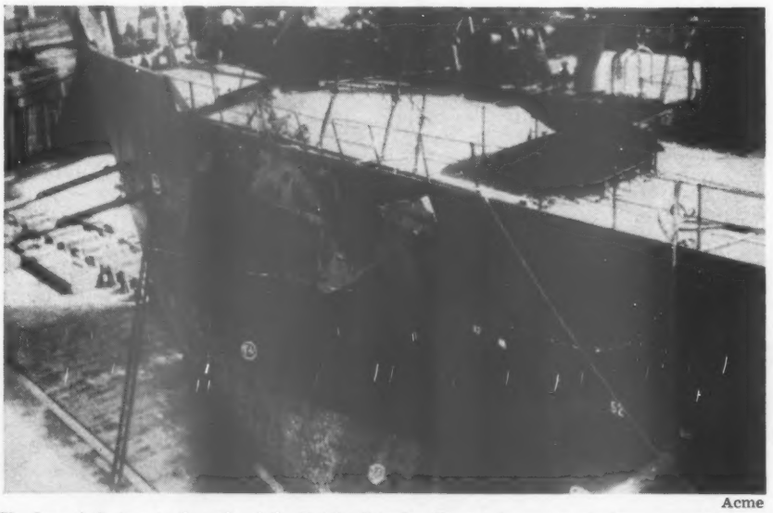
CONSISTENCY? Rumania expropriated the oil properties of private companies. Now its officials are raising a howl because they fear that Germany will take over these properties from them in the same manner.

HUMAN ELEMENT: The Interstate Compact Commission will consider a pattern conservation law covering 27 legal-size pages. Lawyers agree that one sentence is enough for petroleum conservation. The rest regulates the regulators.

THIRST QUENCHER: A new pay has been found in West Texas. That was one of the areas from which a number of people expressed willingness to drink all of the oil produced.

MUM'S THE WORD: Another Woodbine sand pool is opened. Those wishing to make predictions regarding its value should read similar predictions made 10 years ago about East Texas and wait.

TORPEDOED TANKER MAKES PORT . . .



Acme

The huge hole torn in the side of the Dutch oil tanker Hermes by a torpedo from an Italian submarine which attacked the ship near Lisbon, Portugal, is shown in this picture. The Hermes managed to limp into Lisbon harbor, where she is still in drydock

Principles of Allocation in Conservation of Oil

By JOSEPH E. POGUE
Member, Advisory Committee on Economics to the Interstate Oil Compact Commission*

A formula for coordinating market demand and optimum rate of production in establishing allowables is presented in this discussion. Principles are outlined, now implicit in the existing system of proration, which are imperfectly applied in many of the nation's oil fields. Conflict between equilibrium and equity, the author points out, can be reconciled by gradual transition in making adjustments to optimum rate.

THE chief concern of the Interstate Oil Compact Commission and the state conservation agencies is the prevention of waste in the production of petroleum, an objective specified by law and supported by public opinion. The determination of production quotas is a pivotal factor in the conservation mechanism. Upon the soundness of such schedules, as much as upon the conformance to them, depends the success of the undertaking. It is the purpose of this paper to review the methods of allocating the demand for oil and to suggest modified procedures designed to relieve the tensions now appearing in the system and to induce a more logical and consistent functioning of the regulatory machinery.

Principles of Conservation

Equity is both a legal and an ethical concept. If the legal aspects of equity are violated, the courts will invalidate the practice. If the ethical aspects are transgressed, the sense of fair play is destroyed and grievances are created, alienating popular support and leading either to disintegration of the system or else to regimentation for enforcing conformance.

Equilibrium is an economic function and embraces the balancing of supply and demand, both as a whole and internally amongst the several parts. Proration practice can, in a measure, disturb the equilibrium of the industry and therefore it incurs the obligation of compensation. When the degree of conformance of production to forecasts of market demand is varied widely by proration authorities, the occasional periods of economic instability which ensue may be prolonged almost indefinitely. On the other hand, the overall equilibrium of the industry can be improved appreciably by reducing the magnitude of the swings in production by the device of regulating output closely to forecasts of market demand. Establishment of unbalanced proration formulas, grants of special allowables, and erratic policies within and between the states upset the internal equilibrium of the industry. It is entirely practicable, however, for proration to make a contribution to this area of equilibrium by employing techniques which tend to restore normal incentives and provide for more uniform rates of depletion. In this way, the investment required is minimized, logical price differentials are encouraged, and the unstable shifting of trade channels is largely eliminated. Equilibrium must not be made the primary objective, with conservation merely as an attribute, for proration would then degenerate into a stabilization measure with its inherent tendency toward extreme centralization. This outcome can be avoided if prices remain free to perform their natural economic functions as governors of capital flow. When requirements rise more rapidly than the optimum rate, discoveries should be stimulated and when the optimum rate rises more rapidly than consumption, exploration should be retarded. Equity demands that each pool be adjusted to the same percentage of the optimum rate, but to do this suddenly would upset equilibrium. It is at this point that equity and equilibrium come into conflict. These two factors can only be reconciled by utilizing the principle of gradual transition, that is the dimension of time, in making adjustments to the optimum rate.

The Optimum Rate of Production

The optimum rate is a physical criterion derived from engineering data. It may be defined in the following terms:

> The optimum rate is that flow which minimizes, per barrel of production, development of pressure differentials or declines, release of gas from solution in the reservoir, shifting of the gas cap, retrograde condensation in the formation, and intrusion or encroachment of water.

Production quotas are a necessary mechanism in the administration of proration. Under present practice, production allowables are arrived at roughly as follows: The U. S. Bureau of Mines each month forecasts the total market demand for crude oil on the basis of gasoline requirements with some check against fuel-oil needs. After allowing for the difference between expected imports and exports, the remainder is allocated to the various oil-producing states on the basis of trade channels. The state authority either accepts or modifies the state quotas and then makes allocations to fields on a variable basis with frequent adjustments, from which the allowables for properties are arrived at on a pro rata basis, usually at so much per well. Without going into the details of these evolving methods, it is possible to lay out a modified course of action which should improve the workability of the entire system. The proposed procedure employs the present machinery, utilizes the best features of each existing step in the process, but introduces a series of homogeneous principles, centering around engineering concepts, designed to result in sounder and more equitable standards for production.

Step 1: Determination of total market demand.— The forecasts of total market demand as now made by the U. S. Bureau of Mines are practical and satisfactory. It might be advisable, however, to broaden this work to embrace estimates of consumption for each product, probable levels of imports and exports in harmony with national policies, and changes in stocks of all oils. These data could then be used to estimate the volumes of various grades of oil required and recommendation could be made to the states by types of petroleum necessary to meet probable demands. In this way the flow of oil could accommodate itself more readily to seasonal and cyclical shifts in consumption. The bureau makes no recommendations as to inventory changes for crude oil, leaving this factor to the competitive action of the states, which contributes some desirable flexibility to the system.

Step 2: Allocation of market demand to states.— Present practice, as followed by the Bureau of Mines in preparing its recommendations for state allowables, rests heavily upon the trade channel theory of allocation. The flexibility of this method and the ease of gaining acceptance for it are its prime assets. The failure of this procedure to anticipate rapid rises and declines in flush supply, as for example in the recent case of Illinois, which results in a lagging conformance to actual shifts in demand, is a drawback only in exceptional cases where important discoveries are developed in states not adhering to the principles of proration; even here the situation could be handled by adjustments derived from production forecasts and analyses of inventory changes. Fundamentally, however, flush production has no place in a proration system and such situations should gradually disappear.

Long-Range Suggestion

Long-range policy and equity suggest the possibility of improvement in the state allocations by introducing the consideration of a new principle directly tied in with waste preventon. Trade channels are capitalized expressions of a mutuality of interests between economically related segments of supply and demand; they cannot be violated except at the expense of both equilibrium and equity; but since supply and demand have a mutual reaction, it is possible to induce a gradual shift in trade channels, within certain limits, in order to gain an improved flow pattern with reference to the conservation objective. To this end, the following plan is offered which, in addition to forecasts of market demand, requires data on optimum rates which can properly be developed by the Interstate Oil Compact Commission working in close cooperation with the state conservation bodies. The following formulas, allowing for slow transitions and time to perfect data for determining optimum rates, are merely suggestive:

Suggested Method for Allocating Total Market Demand to States

Year
1st State = 90% by market demand + 10% by opt. rate
2nd State = 80% by market demand + 20% by opt. rate
3rd State = 70% by market demand + 30% by opt. rate
4th State = 60% by market demand + 40% by opt. rate
5th State = 50% by market demand + 50% by opt. rate

Note—The procedure is as follows: Allowable demand is first allocated on the basis of market demand; then a separate allocation is made on the basis of optimum rate; and finally the quotas thus obtained are weighted and combined as shown above. In the first and second years developed reserve may be used as a base for allocation instead of the optimum rate, switching to the optimum basis in the third year. The degree of graduation of the formulas in time is experimental and subject to modification with experience.

(Continued on Page 98)

*A paper presented before the quarterly meeting of the Interstate Oil Compact Commission in Tulsa, Dec. 6-7, 1940. The writer is indebted to his associates, particularly Dr. Norman D. Fitz Gerald, for suggestions and assistance in the preparation of this paper.

Taxation for National Defense Discussed Before Tax Group

PROBABLE form of new federal taxes expected to be placed in effect during 1941 for financing the national-defense program occupied much of the discussion at the annual joint meeting of the Mid-Continent Oil & Gas Association's standing committees on state and local taxation and federal income and excise taxation, held in Tulsa, December 5-6.

As keynoted by Frank B. Long, vice president of Oklahoma Natural Gas Co., Tulsa, in the opening address members were told the nation can and must finance an adequate national-defense program and provide essential public services without resorting to taxation programs so burdensome and confiscatory as to endanger the present or future progress of the citizenship. In this regard, he said:

"There is no controversy respecting the necessity of a national-defense program, its fulfillment is essential to the continuance of our American way of life. The controversy relates only to the economic means of accomplishing the admitted objective . . ."

During 1939, Mr. Long pointed out, United States citizens paid in federal, state and local taxes approximately $14,000,000,000, exclusive of social-security payments. Of that amount the federal Government collected about $6,000,000,000 and state and local agencies (182,602 units) collected some $8,000,000,000, he said. Therefore to meet defense expenditures without overtaxation, he suggested that outlying governmental units (federal, state and local) curtail their cost of operations by 25 per cent. If income is equal to last year, with several billion dollars saved in operations, "you will have the several billions to pay on defense bills, and should have no increase in taxes."

Advocates Local Economies

The association's president, J. C. Hunter of Abilene, Tex., likewise suggested that in view of the known, as well as unanticipated, costs of national defense, the local and state governments should not only refrain from increasing taxes but should endeavor, by every means possible, to cut state and local taxes to the very minimum.

Following these keynoting addresses in the opening morning session, George Guth of Socony-Vacuum Oil Co., Inc., Washington, D. C., addressed the group on new trends in social security, and especially on old-age contributory pensions and unemployment compensation. He outlined provisions and benefits of these two phases, dealing in detail with experience rating in unemployment compensation.

He advocated experience rating with the view that it would lead to a tax savings under certain conditions. Under this system employers who provide steady work pay a lower tax rate than those who do not, thus benefits from unemployment compensation funds will be drawn chiefly by employes of those employers who do not provide stable employment. Such employers will, therefore, be called upon to make larger payments to the fund. Thus experience rating in addition to the incentive to stabilize employment, he said, provides a means of replenishing the unemployment compensation fund in proportion to the extent that it needs replenishment.

In concluding, he pointed out that for many employers, federal and state social-security taxes are the largest taxes they pay today. "Much fuss was made about the excess-profits tax, but what will it amount to; $250,000,000 a year at the most, while these taxes, the employer's part only, run to $1,300,000,000 a year now and if the brakes are not applied, will run twice that sum and perhaps more."

Possibility of a manufacturers excise tax being enacted in 1941 was pointed out by Congressman Wesley E. Disney in his address on "Federal Revenue Problems." Making only a brief reference to a sales tax he said the Government had taxed all possible sources and that the sales tax was the sole remaining plan of taxation which has not been used.

Compromise Between Theories

He explained the complicated process by which tax legislation is enacted by the legislature, tracing particularly development of the excess-profits tax of 1940. This measure, he said, was a compromise between two schools of taxation: One favoring a tax on an investment basis and the other on average earnings. He favored the latter.

Congressman Disney also pointed out how governmental spending had increased from about $1,000,000,000 in 1915 to nearly $10,000,000,000 for 1940, exclusive of the $15,000,000,000 emergency defense program. In 1938 the total expenditures of federal, state and local governments reached $18,300,000,000, he said, whereas the total income of citizenship was only $64,000,000,000. Thus the American people spent more than 29 per cent of their total income to govern themselves, he pointed out.

Following Congressman Disney's address, Gail S. Carter of the New Mexico State Bureau of Revenue, spoke on "Sales and Use Tax Decisions and Rulings," and Dr. F. H. Guild, director of the research department of the Kansas Legislative Council, spoke on "The Kansas Revenue System." At the annual tax luncheon held Friday noon, Gov. Leon C. Phillips of Oklahoma delivered the chief address.

The Friday morning general session was devoted to hearing the report of the standing committee on state and local taxation, given by Dan D. Harley of Ohio Oil Co., Fort Worth, Tex., retiring chairman, and the report of the committee on federal income and excise taxation, rendered by its chairman, J. A. McNeese, Continental Oil Co., Ponca City, Okla.

At the closing session officers of the two groups for the ensuing year were elected and Fort Worth, Tex., chosen as the place for holding the 1941 annual joint meeting.

John Hammerman, Jr., Gulf Oil Corp., Houston, Tex., was selected general chairman and A. J. Wells of Carter Oil Co., Tulsa, was selected general vice chairman of the standing committee on state and local taxation for the coming year. H. F. See of Atlantic Refining Co., Dallas, Tex., and H. D. Mahin of Campbell, Randolph, Mahin & Mosteller, Tulsa, are the new general chairman and vice chairman, respectively, of the standing committee on federal income and excise taxation for 1941.

Trends in Operating Practices

The Oil and Gas Journal's Annual International Number, December 26, will include a special Foreign Language Section which will describe in two languages—Spanish and English—the latest developments in exploration, drilling, production, refining, natural-gasoline manufacture and pipe-line transportation. This large section which has been a feature of The Journal's International Number for several years, is accepted throughout the petroleum world as an authoritative discussion of the latest in engineering and processing trends.

There are numerous other features to the International Number, including a 30 by 40-in., four-color oil map of South America inserted in mail-subscribers' copies.

Tendencias en Prácticas de Operación

El Número Anual Internacional de The Oil and Gas Journal, del 26 de diciembre, incluirá un especial Sección en Lengua Extranjera—en español e inglés—en la cual se describirán, en ambos idiomas, los últimos desarrollos en exploración, perforación, producción, refinería, manufactura de gasolina natural y transporte por línea de tubería. Esta gran sección, que ha sido el rasgo sobresaliente de los números internacionales del Journal, por varios años, se acepta en el mundo petrolero, como una presentación autorizada de las más recientes tendencias en ingeniería y procedimientos.

En el Número Internacional de este año hay numerosos rasgos interesantes, incluyendo un mapa petrolero de la América del Sur, de 30 por 40 pulgadas, a colores, que es el más completo de todos los publicados hasta ahora.

John Hammermann, Jr., Gulf Oil Corp., Houston, Tex.; Dan D. Harley, Ohio Oil Corp., Fort Worth, Tex.; J. A. McNeese, Continental Oil Co., Ponca City, Okla., and H. F. See, Atlantic Refining Co., Dallas, Tex.

Sink Holes Important Feature In Arbuckle Dolomite

WICHITA, Kans., Dec. 10.—The geology of "sink holes" in the Arbuckle dolomite on the Central Kansas uplift and how it affects oil production were outlined comprehensively by Anthony Folger, Wichita, district geologist for the Gulf Oil Corp., and chairman of the Kansas Nomenclature Committee, last week.

Testifying in the capacity of the nomenclature chairman before the Kansas Corporation Commission at a hearing on the application of Lario Oil & Gas Co. to join the Silica and South Silica pools in Rice and Barton counties, Mr. Folger pointed out that "it is the premise of the (nomenclature) committee that sink holes do not constitute a barrier and are not a valid reason to separate a pool." At the time, Mr. Folger stated that in his opinion, the Silica and South Silica pools are one (structural) feature and the same common source of oil supply.

During the course of 3 hours' testimony on the occurrence and geological significance of sink holes, Mr. Folger stressed that the decision of this hearing will hinge on sink holes, which he termed "a very common characteristic of lime topography."

The Gulf geologist, in describing this geological phenomenon, said that it was a common occurrence in the Arbuckle dolomite and is amply proven at the outcrop of the Ozark Mountains.

In describing conditions existent in the Arbuckle dolomite, Mr. Folger said that the Silica field is typical of many western Kansas areas, and stated that the basal Pennsylvanian conglomerate was absent over most of the structure leaving marine Marmaton (Pennsylvanian) limestones in contact directly with the underlying Arbuckle dolomite.

In reviewing sink holes in the Silica field, Mr. Folger explained that in this two-county area, including portions of 50 sections, 70 dry holes had been completed to date, of which 36 were due to sink holes.

Mr. Folger indicated that there were no surface indications that will reflect the locale of sink holes leaving the observer with the impression that their occurrence remains a hazard of the oil operator which the geologist cannot predict. Their barrenness is explained by compacting overlying detritus preventing leaching and subsequent porosity.

He classified sink holes in the Silica field on the basis of offset production characteristics, and showed that out of 36 occurrences, 2 are completely surrounded by oil wells, 4 are offset by three oil wells, 15 are offset by two oil wells, 8 are offset by one oil well, and 6 are ¼ mile from the nearest oil production.

The geologist stated that the farthest distance of a known sink hole from oil production is not more than ½ mile.

Average thickness of detrital fill in these sink holes was cited by Mr. Folger as 51 ft.; omission of five examples would raise the average to 60 ft. The range of thickness of fill varied from 14 to 163 ft.

Two outstanding examples were designated in the testimony where barren sink holes are completely surrounded by wells. In one of these cases, Stanolind 3 Mitchell, in SW NW SW 32-19-10w, Rice County, encountered 53 ft. of detritus before penetrating 7 ft. of Arbuckle dolomite. It is completely surrounded by eight oil wells and was subsequently deepened into lower levels for a salt-water disposal well. It is an odd map

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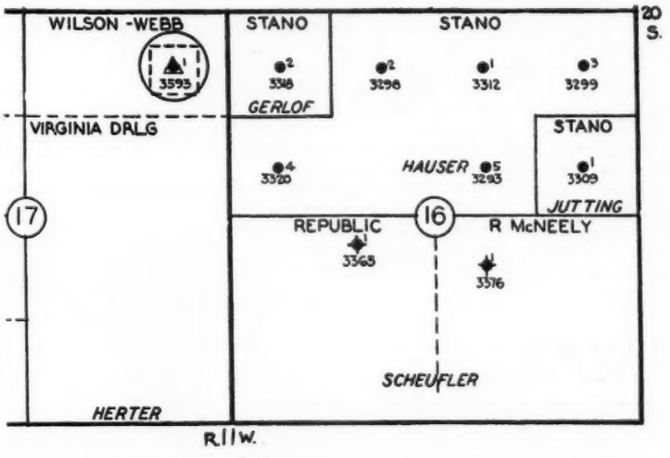
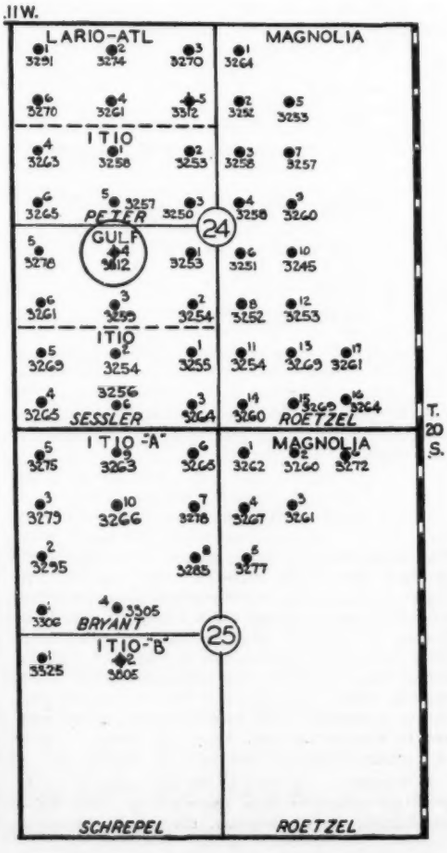
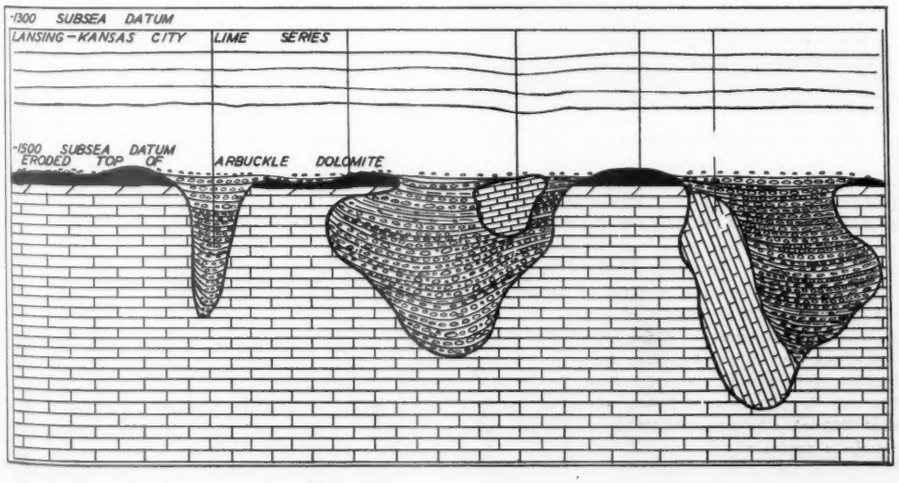




Above: One of the greatest thicknesses of detrital material yet found in deep sink holes drilled in the heart of the Silica field is shown on the above map by circle. The sink hole is a solution cavity in the eroded Arbuckle dolomite surface

Right: The detail production map shows one of the two examples in the Silica oil field, where a dry sink hole is completely surrounded by eight producing oil wells. The circle indicates the barren spot, which may not cover the 10 acres in which the well is drilled

Below: Diagrammatic section showing several different types of sink holes and producing conditions of the eroded surface of the Arbuckle dolomite. (Data, courtesy Gulf Oil Corp.)



STATE CAPITALS...

CALIFORNIA

PRELIMINARY DATA INDICATE that California crude-oil production for the month of November averaged approximately 608,000 bbl. daily which is about 39,218 bbl. per day above the allotment set by the Conservation Commission. It had been expected that crude-oil production would drop to within striking distance of 600,000 bbl. daily but increases were recorded in several fields that were making up cumulative underages. Production for the past several months has been consistently lower due to additional curtailment and a recent check indicates that production for the month of December will be on a par with the daily output at the beginning of 1940.

There have been several high peaks during the intervening months but for the most part the hills and valleys have been smoothed out.

Despite the substantial contribution of Kettleman Hills this field headed the list of overages during November followed by Elk Hills, Wilmington, Long Beach, Rosecrans, Santa Maria Valley and several other districts. A concerted attempt is being made to eliminate all excesses during December in order to start off the new year in a better statistical position.

TEXAS

MOVE TO PROHIBIT SALT-WATER DISPOSAL into the Neches River system was made by Atty. Gen. Gerald Mann, represented by his assistant Hugh Q. Buck, on Monday by instituting contempt proceedings against one oil company. The contempt petition was filed in the Fifth Court of Civil Appeals at Dallas against H. W. Donnell of Henderson. The proceedings were predicated on the state's charge that on December 5 salt water from wells on one of Mr. Donnell's leases in the East Texas field was disposed of into Wright Branch, a tributary of the Angelia and Neches rivers. Mr. Donnell was one of 11 defendants enjoined last November 8 by Judge John Rawlins from polluting the Neches River system.

Previously the state had brought suit against more than 100 East Texas oil-well owners to enjoin them from polluting the river system. Most of the defendants entered agreements with the state for installation of equipment which would dispose of the waste matter in a manner satisfactory to the state.

Appeal from Judge Rawlins' action was taken by Mr. Donnell, thus giving the appellate court jurisdiction. The state recited in its petition Monday that Donnell "had not filed a supersedeas bond or in any manner superseded the effect of the judgment for injunction."

ALLOWABLE OIL PRODUCTION IN TEXAS rose to 1,358,848 bbl. last Saturday, or approximately 36,233 bbl. above the estimated market-demand figure of the Bureau of Mines, the Oil and Gas Division of the Railroad Commission reported. This was the first week's production under the recently issued December-January proration order which stipulated a basic allowable of 1,745,230 bbl. Reductions through shutdowns, of which there are nine in December, were expected to reduce the average daily allowable to 1,358,848 bbl. Using an estimated 3 per cent underproduction of allowables would result in lowering the overage to some 36,233 bbl. above the bureau's figure of 1,277,000 bbl.

A decrease of 275 wells in the total number on the proration schedules was reported by commission statisticians. As of Saturday, the average marginal-exempted allowable was placed at 108,911 bbl., which was 24,650 bbl. above the exemption total of the final week under the 3-month proration order that expired November 30. Following is a table of the net daily allowables of the various districts for the first week of December, and the average daily marginal exemptions:

	Net daily allowable (bbl.)	Average exempted allowable (bbl.)
Southwest Texas	217,390	13,381
Gulf Coast	233,433	15,818
East Central	83,524	19,368
East Texas	371,752	2,116
West Central	48,844	7,709
West Texas	202,860	11,528
North Texas	110,995	14,299
Panhandle	85,050	24,692
Total	1,353,848	108,911

POSSIBILITY OF WRITING AN OIL-PRORATION "formula" into the state's law is being discussed by Texas oil men dissatisfied with current policies of the Texas Railroad Commission. The possibility was seriously discussed at the recent state-wide proration hearing. Consensus was that writing such a plan—elastic enough to take care of special problems, yet rigid enough to insure against warping by administrative agencies—would be extremely difficult.

The present law makes the Railroad Commission the sole arbiter of production allowables within these limits: (1) The commission is enjoined to prevent physical waste, and (2) the commission may consider the market demand for oil and hold total production within that market demand. However, it is not compulsory upon the commission to consider market demand.

The present laws define various forms of waste which the commission shall prevent by administrative order, and then leaves the rest to the discretion of commissioners. It is with this discretion that dissatisfaction has been expressed. Exponents of writing a definite formula into the law want other things considered than those which the commissioners consider. They believe the acreage drained by a well and the reserves of an oil field should be considered.

LEE S. MILLER

Lee S. Miller, petroleum engineer of the Michigan Department of Conservation and a member of the engineering committee of the Interstate Oil Compact Commission, has a widely diversified petroleum-engineering experience that well qualifies him for his activities. He first became connected with the oil industry with the old Century Oil & Gas Co. of Uvalde, Tex. Later he was with the Bureau of Mines, stationed at Casper, Salt Creek and in the Big Horn basin of Wyoming. In 1926 he became gas superintendent for Carter Oil Co. with headquarters in Tulsa, where he presided until 1933 when he moved to Michigan as a consulting petroleum engineer

KANSAS

THE KANSAS CORPORATION COMMISSION has fixed that state's allowable production during December at 192,400 bbl. daily, an increase of 2,400 bbl. over November. Theo A. Morgan, conservation director, stated the commission had used the Bureau of Mines recommendation of 188,400 bbl. daily for current production in December and added 4,000 bbl. daily for new production developed during the month.

Net October allowables and net December allowables, in barrels, of the larger fields were shown as follows: Ainsworth (Arbuckle), 36,107 and 34,099; Bemis, 262,638 and 270,200; Bloomer (Arbuckle), 120,717 and 124,163; Bornholdt, 111,925 and 120,169; Burnett (Arbuckle), 168,049 and 174,797; Burrton (chat), 164,113 and 180,559; Burrton (Hunton), 46,151 and 41,458; Chase (Arbuckle), 134,489 and 145,878; Coralena (Arbuckle), 31,021 and 30,506; Edwards, 42,495 and 49,709; Geneseo, 112,490 and 116,214; Gorham (Lansing-Kansas City), 78,905 and 106,243; Graber (Hunton), 74,030 and 77,925; Hall-Gurney (Lansing-Kansas City), 185,594 and 184,842; Hittle (Arbuckle), 965,483 and 215,542; Kraft, 31,923 and 35,689; Lost Springs, 33,041 and 40,235; Richardson, 40,373 and 40,600; Ritz-Canton, 113,465 and 117,962; Russell (Arbuckle), 31,064 and 31,138; Silica (Arbuckle), 365,673 and 370,091; South Silica (Arbuckle), 75,182 and 82,693; West Silica (Arbuckle), 36,361 and 41,975; Stoltenberg, 84,017 and 98,493; Sullivan (Gorham), 87,660 and 88,076; Trapp (Arbuckle), 391,321 and 402,101; Voshell, 48,351 and 55,529; Walters (Arbuckle), 31,592 and 29,503; Wellington, 39,337 and 31,957; Wherry, 123,219 and 129,737; Wilkins, 36,279 and 37,184; Zenith, 171,463 and 180,984.

The schedule listed a total of 20,629 wells with a potential of 6,984,512 bbl. This included 6,524 prorated wells with a potential of 6,938,765 bbl. and 14,106 wells with a potential of 45,747 bbl.

AN OFFICE FOR ENFORCEMENT of the Connally hot-oil act may be established in Kansas soon it has been revealed. George W. Holland, director of the Petroleum Conservation Division of the Department of Interior, in an interview at Wichita last week stated he would recommend that such an office be established for enforcement of the hot-oil act. He said that conditions in Kansas had been the subject of an inquiry for the past several months. The office will probably be located in Wichita, but Topeka is also being considered, he said.

ARKANSAS

THE ARKANSAS OIL & GAS COMMISSION has called a state-wide hearing for December 16 in El Dorado to hear evidence of waste or imminence of waste in state oil and gas fields. The proposed unitization and repressuring of the Jones sand in the Schuler field may be brought up at the hearing.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Permanent Emergency

There are familiar reverberations in the crisis which has developed in Texas within the past few days. Complaints reminiscent of the past are heard and the same remedies are being suggested.

Although the state's regulatory body looked over the situation early in the month and found nothing wrong, now, through emergency measures, it will attempt to correct the conditions which are largely a reflection of imperfections in its administration.

It would be difficult to challenge the position of most of the smaller refiners who have justified the reductions that have been made effective in a few fields.

They have data showing the consistent weakness in refinery markets over the past year resulting in many instances in a decrease of 50 cents or more in plant revenue from a barrel of crude oil for which they are paying the same posted prices at the well. They can cite instances where competitors have been able by various devices to obtain concessions which have substantially reduced their crude-oil costs giving them advantages in the sale of all refinery products.

On the Gulf Coast these refiners have seen their export markets, which normally absorbed practically all of their plant output, disappear and they have been forced to look to domestic channels for buyers. Recently, this situation has been further aggravated by sharp increases in tanker rates, thus restricting the coastwise movement of products from their plants.

It might be argued that because these refinery operations are comparatively small they can be ignored by the rest of the industry in Texas. This cannot be done. The conditions of which these smaller operators complain are basic and apply to the entire state. And because Texas has 40 per cent of the crude-oil production and 30 per cent of the refinery capacity, what happens there is of controlling importance to the entire industry.

The markets of the larger companies react to the same conditions as those of the smaller companies and in much the same manner. The extremely low wholesale and retail prices for gasoline—which sellers are now trying to correct—are a current example of this fact.

The sale of few thousand barrels daily of crude oil under the posted prices may at first affect only a few companies and a small area but if it continues there will be similar developments elsewhere and the accumulative result is always a complete breakdown in all markets.

In the current situation sales of crude oil in Southwest Texas under the general postings have expanded to the point where they control refined market trends.

The causes for these conditions in Texas have been explained by many observers in recent months. Dr. Pogue made the most recent observation at the Interstate Oil Compact Commission meeting last week when he said:

"When the degree of conformance of production to forecasts of market demand is varied widely by proration authorities, the occasional periods of economic instability which ensue may be prolonged almost indefinitely. Establishment of unbalanced proration formulas, grants of special allowables, and erratic policies within and between the states upset the internal equilibrium of the industry."

Operators in Texas are paying the penalty of having a conservation program too often dominated by the exceptions to the rules, and characterized by a lack in continuity in enforcement over a sufficient length of time to determine definitely what is good and what is bad.

In times of stress the commission in Texas has been able to point to many accomplishments. It may save the day again. This leads to the conclusion that possibly a permanent emergency as regards conservation regulations, is the answer for the Lone Star State.

May Hold Further Hearings On Oil-Conservation Bill

WASHINGTON, D. C., Dec. 10.—Further hearings on the federal oil-conservation control bill may be held next week, it was revealed today by Representative Cole of Maryland, chairman of the subcommittee.

The hearings will be held next Monday, Tuesday and Wednesday if the prospective witnesses can appear on those days. First witnesses will probably be Edward R. Stettinius and William S. Knudsen, defense commissioners. Others will represent other government agencies. Industry witnesses may be given an opportunity to offer rebuttal evidence later if requested. It is learned on good authority that the hearings were reopened at the specific request of President Roosevelt and the Defense Commission. Asked if he was aiming at further action on the bill at the present session of Congress, Mr. Cole said he supposed that further hearings would delay the measure but he would not make predictions as to this.

This announcement started speculation that the administration is putting pressure on Congress to take quick action on the bill which has lain dormant for many months. Last week Secretary Ickes stated that the defense program makes federal regulation of conservation even more important than it was before. It is believed that members of the Defense and Advisory Commission and Army and Navy officials may be among the prospective witnesses for the reopened hearings. Dr. Robert E. Wilson is oil adviser to the commission.

Secretary Ickes is on record for renewal of the drive for federal supervision of the industry. He has declared the new push will be attached to the defense program despite the National Defense Advisory Commission's satisfaction that the oil industry is fully capable of meeting whatever demands may arise.

The drive for federal control probably will center on the position of residual-fuel stocks east of California which some consider inadequate to meet the industrial demand in the last three quarters of 1941. Residual stocks east of California total approximately 28,000,000 bbl., about 2,000,000 to 3,000,000 bbl. greater than a year ago. Insufficiency of the eastern residual stocks was pointed out at the Interstate Oil Compact Commission meeting in Tulsa last week by A. G. White, chief of the Petroleum Economics Division, Bureau of Mines. Mr. White predicted sharp increases in residual demand in the last 9 months of next year.

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Military Highway Program Will Increase Asphalt Need

DALLAS, Tex., Dec. 10.—The construction of military highways in the United States during the coming 2 years for the movement of mechanized defense units will require the production of an increased amount of asphalt. Since practically all of the asphalt now being used is manufactured or recovered directly from petroleum, the oil industry is again placed in a position to further aid this country's national-defense program. This was a theme expressed through the opening days of the thirteenth National Asphalt Conference in Dallas, Tex., this week, December 9 to 13.

The National Asphalt Conference is the trade-meeting name for the two bodies which constitute it, these being the Asphalt Institute, and the Association of Asphalt Paving Technologists. Both bodies are meeting in convention at the Adolphus Hotel in Dallas this week for the purpose of stimulating a plan of cooperation with government military officials for the purpose of furthering the existing national-defense program, so far as it pertains to defense-unit transportation on the roads and highways of the United States. The majority of the papers delivered, as well as the informal conferences in connection with the meeting, were directed toward expressing the willingness of the asphalt industry to work with the National Defense Commission toward preparing the roads of the United States for military uses in cases of necessity.

Officers Elected

New officers were elected Monday for the Association of Asphalt Paving Technologists, while the present officers and directors of the Asphalt Institute are to remain in office. The new president of the A.A.P.T., succeeding Gene Abson, is Claude L. McKesson, director of engineering and research for the American Bitumuls Co. Elected first vice president of the body was Thomas E. Stanton, materials and research engineer for the Highway Division of California. Chosen second vice president was Dr. Lloyd F. Rader, of the University of Wisconsin.

Two directors at large were chosen in the persons of Prevost Hubbard, chemical engineer for the Asphalt Institute, and Charles Baskin, with the Imperial Asphalt Co., Toronto, Canada.

Capt. J. F. Lucey, president of the Lucey Petroleum Co., Lucey Asphalt & Refining Co., and the Talco Pipe Line Co., and also general chairman of the National Asphalt Conference, opened the Tuesday session of the meetings with the introduction of Col. Patrick J. Hurley. Colonel Hurley was secretary of war under President Hoover, and is an attorney for the Sinclair interests.

CAPT. J. F. LUCEY

Colonel Hurley asserted that the strategical system of military roads in a country is the most important element toward its national-defense system, and also that roads are about the only elements in a national-defense program which will serve the people of the country in peace as well as in war. The need for new roads, as well as the need for repairs to the existing roads in the United States, should have an almost direct bearing to the oil industry, added Colonel Hurley. With the cry of overproduction being heard in the oil industry, an increased amount of the asphalt produced in the United States should be derived from the low-gravity crude oils produced in the United States. He exemplified this by citing the fact that a goodly portion of the crude from which asphalt comes, as well as the asphalt itself, is imported from foreign countries, mainly Venezuela in South America.

Practically all papers delivered before the conference in the days following Colonel Hurley's address on Tuesday dealt directly with the ways and means by which the Association of Asphalt Paving Technologists could better serve the road-building needs of the United States and the Government thereof.

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P. M. Robinson Appointed Assistant To Petroleum Defense Coordinator

Philip M. Robinson, chief engineer, the Pennzoil Co., Oil City, Pa., has been appointed assistant to Dr. Robert E. Wilson, coordinator for the petroleum industry of the National Advisory Defense Commission.

Mr. Robinson was graduated from the University of Michigan in 1928, and immediately went to work for Pennzoil, which company he had worked for before entering the university. He was made assistant superintendent of plant No. 2 at Oil City, and in 1931 was advanced to the position of manager of research and development work for the company. Since that time he has been made chief engineer.

Seek Revision of High-Test-Gasoline Export Control

WASHINGTON, D. C., Dec. 10.—Revision of high-test-gasoline export control to include motor fuel under 87 octane is being urged by Col. Russell L. Maxwell, administrator of the proclamation issued by President Roosevelt July 26.

Gasoline below 87 octane is not produced in this country for aviation purposes but is usable in some types of foreign aircraft motors, Colonel Maxwell said.

Regulations permit exportation of the aviation gasoline only to countries in the Western Hemisphere, the British Empire or American-owned companies or concessions in other nations.

Acquire Majority Interest in Bareco Common Stock

O. L. Cordell, president of Bareco Oil Co., Tulsa, has announced that he and a small group of associates, including Henry Oliver Rea, James C. Rea, George R. Hann and H. V. Blaxter of Pittsburgh, Pa., and Edward B. Burling of Washington, D. C., have consummated an arrangement to acquire from Barnsdall Oil Co. a majority interest in the common stock of Bareco Oil Co. Pursuant to this arrangement, Messrs. Hann and Blaxter have been elected to the board of directors of the company.

No other change in the management or operation of the three refineries located at Wichita, Kans.; Corpus Christi, Tex., and Barnsdall, Okla., is contemplated.

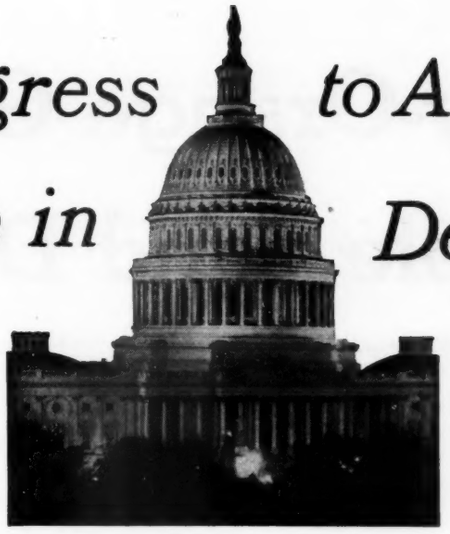
Gulf Employes to Receive 3 Months' Pay for Military Service

PITTSBURGH, Pa.—Twenty-five thousand employes of the Gulf Oil Corp. and its subsidiary companies have been advised of the company's policy regarding those entering military service.

All such employes having 6 months or more continuous service will be granted a 1-year leave of absence.

In addition to the leave of absence, every such employe of the Gulf companies will receive his usual compensation, less governmental pay and allowances, for the period of his military service, or 3 months, whichever is the lesser.

Expect Congress to Attempt More Active Role in Defense Plans



By HENRY D. RALPH

WASHINGTON, D. C., Dec. 10.—Important developments in the defense program and in the Government's attitude toward business are expected soon after the first of the year, and a struggle is looming between Congress and the administration, with Congress attempting to play a more active part in the details of the defense program.

Contrary to general expectations immediately after the election, this "lame duck" Congress is showing a spirit of independence of the executive which very probably will be carried over into the new Congress which convenes January 3. First, it refused to adjourn despite the pleas of its leaders, and then both House and Senate passed the Logan-Walter bill in the face of a threatened presidential veto. Meanwhile, a large number of bills have been introduced proposing investigations of the defense program, a reorganization of the defense advisory commission and other agencies dealing with defense, or placing various restrictions on both employers and labor in connection with defense contracts.

There is a general dissatisfaction with the progress of the defense program which is being reflected in Congress. This was anticipated by the defense planners months ago, and many of them publicly stated that after the excitement of the initial preparation wore off the public would expect to see clouds of planes and trainloads of tanks and guns rolling out of the factories every week even before the new factories were completed. There have been no disclosures of any serious mistakes in the defense program, and no specific substitute for getting faster results has been proposed, but nevertheless there are complaints about the length of time needed before we will reach a high level of production of armament.

Labor in Defense Industries

Where Congress is most likely to take a hand is in the policy toward labor in defense industries. There is a growing concern that the insistence of organized labor for higher wages and shorter hours is increasing the cost and delaying the completion of the defense program and that new legislation is called for. Already rumors are being heard that the Army will come to Congress in January with a request for a very large deficiency appropriation to cover increased costs of building cantonments and completing other contracts, the increases due chiefly to rising labor and material costs. This will undoubtedly precipitate a crisis, for the administration has been sympathetic to labor's gains from the defense program and has been attempting to forestall congressional action by putting pressure on employers to yield to union demands and to conciliate threatened strikes.

Leaders of the C.I.O. profess to be not worried by the prospect of public reaction to the increase in union demands and activities, and they are going ahead with plans to expand their membership in leading industries, particularly aircraft, steel, oil, and chemical. Many A.F of L. leaders, on the other hand, are very much afraid that the militant attitude of the C.I.O., and of some of their own unions, will lead to a public reaction which will result in restrictive legislation. The administration is expected to adhere to its policy of supporting labor's demands except when patently unreasonable, but the present mood in Congress suggests that a change may be forced upon the president. Some observers are of the opinion that the current talk about the necessity of giving more aid to England may be an attempt by the administration to distract attention from this condition and to persuade employers that the foreign situation is so critical that the possibility of strikes should be avoided by acceding to labor's demands.

Talk of actually going to war on the side of England is increasing, and the chief reason advanced for this suggestion is that with the United States on a war footing our industries would speed up and the Government could use emergency powers to channel all industrial effort into the production of defense material. This sort of reasoning is being countered with the alternative suggestion that we could achieve the same results without going to war by giving the administration what amounts to war powers over industry.

Won't Overlook Oil

Whether Congress or the president wins out in the anticipated struggle to direct the course of the defense program, the trend is toward further regulation of business in the name of defense, and the oil industry will not be overlooked in this trend.

Secretary Ickes has already given notice that he will renew his fight for legislation giving the federal Government control over oil production and conservation practices, citing defense as a reason for prompt action by Congress, and this matter is scheduled to come to a head again early in the next session. Representative Cole of Maryland, who introduced the oil-control bill and headed a subcommittee which held hearings, has prepared a "progress report" which he intended to release some time this month, but last week he indicated that instead of making a routine report at this time he will keep the subject alive by calling his group for more hearings in January. Since all bills die with the end of a Congress, the Cole bill will have to be reintroduced, but the same subcommittee will continue in existence and hearings held on the old bill need not be duplicated. Mr. Cole stated that members of the Defense Commission should be invited to express their views on the defense angle of federal control of oil, a fact which suggests that the administration is prepared to get behind the Cole bill more strongly than before.

Other proposals for business regulation will come out of the Temporary National Economic Committee. Congress has just extended the life of this organization by three months, giving it until April 3, 1941, to file its final reports and recommendations. Chairman O'Mahoney has not indicated what sort of recommendations will be made but some of them will very likely pertain to the oil industry in view of the extensive hearings the T.N.E.C. held on oil. Certainly Senator O'Mahoney will reintroduce his bill for federal licensing and control of corporations doing business in interstate commerce, and also his bill to put stiff criminal penalties on officers of corporations violating the anti-trust laws.

Taxation will be one of the chief problems before the new Congress, though a definite bill probably will not be drafted until a study has been made of the March 15 income tax returns. More revenue must be found somewhere, and while President Roosevelt has expressed opposition to a general sales tax, there is more than a possibility that Congress will increase the excise tax on gasoline and lubricating oil. Corporation taxes in general probably will be increased, and there will be a fight over the Treasury's proposals to revise the corporation income and excess-profits taxes to bear more heavily on large companies than on smaller enterprises.

Aviation Gasoline

The plan to build up a reserve stock pile of 100-octane aviation gasoline, worked out last summer by the Defense Commission, may be put into effect within the next few weeks. The Defense Supplies Co., an R.F.C. subsidiary, is ready to make the purchases whenever the Army and Navy gives the word, but final details have not yet been agreed upon. Officials feel that there is no immediate need for speed in getting the program under way because at the present rate of aircraft deliveries it will be many months before the fleet of military and naval planes will be large enough to require all the aviation gasoline that existing plants can supply. The plan calls for purchases by the Defense Supplies Co. and repurchase by the Army and Navy, and there is some doubt that the purchasing officers have authority to make commitments to purchase such supplies in advance. Unless a definite ruling can be obtained soon, it is expected that a deficiency appropriation bill to be presented to Congress in the near future will carry specific authorization for the aviation-fuel reserve plan. At any rate, officials declare that the plan has not been abandoned and will come to active life as soon as it is really needed.

When the aviation-gasoline-storage program was first initiated in Washington military authorities tentatively agreed on an approximate figure of 7,500,000 bbl. as a desirable quantity to have in reserve for defense contingencies. Later the figure was cut to 3,000,000 bbl., which still stands, although it has never received official confirmation.

Details awaiting decision in addition to the complexities of finance include who will store the aviation motor fuel and where it will be located. The possibility of using the petroleum industry's storage facilities for holding the reserve aviation-fuel stocks with delivery to be determined at a later date has been discussed.

The American Petroleum Institute now has a committee functioning under the general direction of W. S. Farish, president of the Standard Oil Co. (New Jersey), to coordinate the industry's facilities with the defense program.

Wade City-Orange Grove May See Multiple Sand Drilling

By NEIL WILLIAMS

HOUSTON, Tex., Dec. 10.—The Wade City-Orange Grove area in Jim Wells County continues a focal point for development in the lower Texas Gulf Coast. Already established as one of the more important producing reserves of the district, it still offers prospects for much additional drilling, since there remains not only considerable potentially productive acreage to be exploited but there are also various sands within the present producing limits in which multiple development is probable.

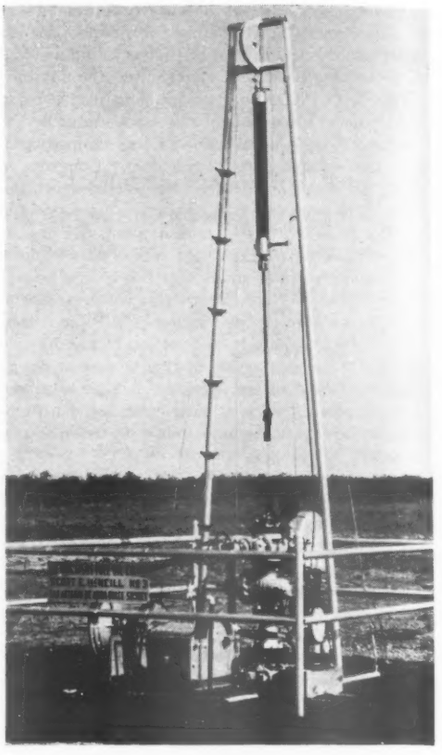
Curtailment of drilling during the past couple of months has reduced the number of active operations in the immediate field from a peak of 19 to around 8 to 10, but increasing activity is getting under way in new areas and extensions being opened close by. Sufficient locations already have been made within the field proper to keep the present active rigs busy for some time, and new work due to be started shortly is expected to put additional rigs in operation.

Recent completion of a producing well about 1½ miles south of Wade City production and a similar distance southwest of the Orange Grove pool opens extensive new possibilities for development. So far it has not been determined whether the new well is an extension of the Wade City-Orange Grove production or represents the opening of a separate pool, but in either event attempts to link the areas probably will be made without much delay.

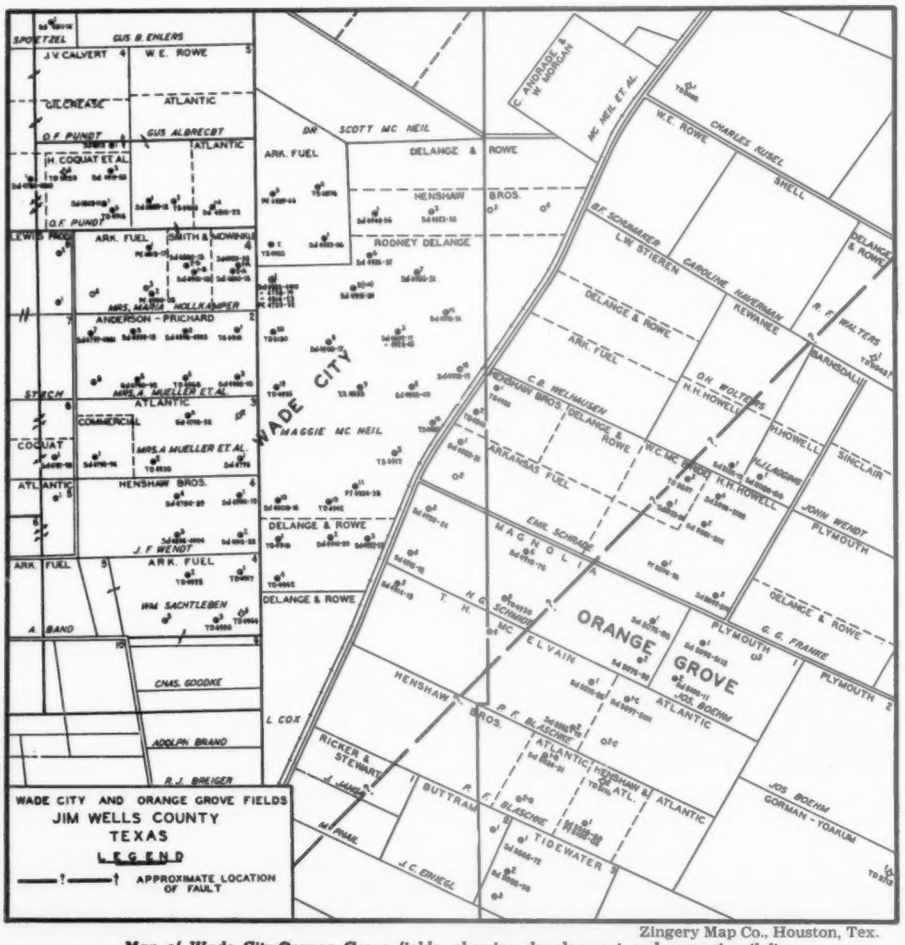
Could Start Intensive Play

The new well (H. R. Smith, Inc.'s No. 1 Norma Schumacher) is located just south of the Orange Grove townsite, which lies between the well and the Wade City-Orange Grove production. This, along with diversified lease and fee ownerships of other surrounding acreage, could start another intensive play. Considering the area already taken in by the Wade City and Orange Grove fields, proving up of the acreage linking the Smith well will result in a producing area of sizable proportions.

More recently, another producing area has been opened about 3 miles southeast of the Orange Grove pool by the completion by Henshaw Brothers of their No. 1 Boerner, which flowed on potential test 91 bbl. daily through an ⅛-in. choke from sand at 5,139-45 ft. A west offset now is being completed in a deeper sand, and further drilling is due to get under way in that area. While it is considered unlikely that this production will join that of Orange Grove, the way is opened for considerable drilling between the two areas.



Arkansas Fuel Oil 3 Scott McNeill, only well in area employing artificial lift



Zingery Map Co., Houston, Tex.

Map of Wade City-Orange Grove fields, showing development and present activity

Indications of still another producing area about 3 miles east of Orange Grove have just been given in a wildcat drilled by H. R. Smith. This test (No. 1 Kohler) has been testing a sand showing oil and gas with casing perforated at 4,863-75 feet. Acreage around this well is held by numerous independent and major companies, and completion of a producer would start an active development program.

Designated as two separate fields, the respective producing areas of Wade City and Orange Grove adjoin, being separated only by a subsurface fault. The Wade City field takes in the producing area on the upthrow, or northwest side, of the fault, while the Orange Grove field is the downthrow, or southeast side, of the fault. Corresponding sands in the Orange Grove area are encountered from 250 to 300 ft. lower than in the Wade City sector. Sand depths in the Smith extension well south of the Orange Grove townsite correspond closely with those of the Wade City area, location of the well probably being on the

northwest side of the fault, which extends through the townsite.

A combined productive area of approximately 2,000 acres already has been proved for the Wade City and Orange Grove fields. Of this, approximately 1,400 acres lie on the Wade City side and about 600 acres on the Orange Grove side of the fault.

First production of the Wade City area was opened in July 1939. The discovery well, drilled by W. R. Quinn, was completed as a gas-distillate producer in a 4,800-ft. sand, casing in the well being perforated at 4,809-14 ft. This sand since has been designated as the Pundt sand, taking its name from the owner of the land on which the well was completed. The same sand on the Orange Grove side of the fault is found around 5,100 ft.

Active development did not get under way in the area until the early part of this year following the completion of the first crude-oil producer in February. Up to that time only three wells, all distillate producers in the Pundt sand, had been completed, not including scattered outpost dry holes. The crude-oil well, drilled by Rodney Delange, was completed in a 4,900-ft. sand, since designated as the McNeil sand, in which the major part of the development in the Wade City area since has taken place.

Production Opened in May

Production in the Orange Grove area was opened in May 1940. The first well (Henshaw Brothers and Atlantic's No. 1 Pauline Blaschke) was located about 1½ miles southeast of production at that time of the Wade City field. It was drilled as an extension of the Wade City development, but subsequent development revealed the presence of the intervening fault, definitely proving that area as a separate field. Since, production of both areas has been extended until now the areas join along the fault line.

The sand in which the discovery well was completed was topped around 5,088 ft., and in it the well was perforated at 5,100-03 ft. It has been designated as the Blaschke sand and is believed to correspond to one of the shallower gas sands in the Wade City area. So far the principal production in the Orange Grove area has been from this sand, although several wells have been completed in the Pundt sand, the discovery sand of the Wade City area, which is found from 50 to 55 ft. below the Blaschke sand.

In the Wade City area, more than 70 producing wells (including gas-distillate wells) have been completed, while in the Orange Grove field there have been 19 wells. Latest field reports list approximately 65 oil wells on production at Wade City with a current daily average production of more than 3,750 bbl., allowing for shutdown days. In the Orange Grove area there are 17 oil wells actually on production with a daily average production of close to 1,350 bbl., allowing for shutdown days.

A summary of development and present activity in area by operators is shown in the following tabulation:

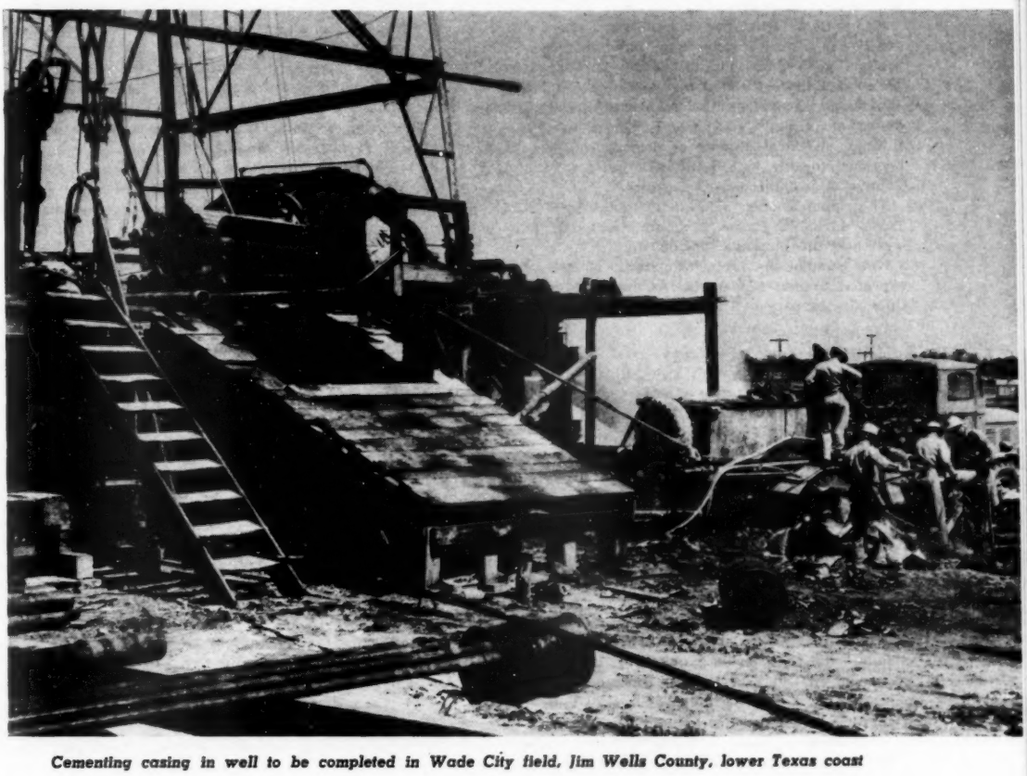
WADE CITY FIELD

Company—	No. producing wells completed	Active rigs
Anderson-Prichard	7	1
Arkansas Fuel Oil Co.	10	2
Atlantic Refining Co.	6	1
H. Coquat	4	0
Commercial Prod. Co.	1	0
Rodley Delange	21	0
Gilcrease Oil Co.	1	0
Henshaw Brothers	8	0
Eaves Oil Co.	1	0
Lewis Production Co.	0	1
W. R. Quinn	1	0
Magnolia Petroleum Co.	4	1
T. H. McElvaine	1	1
H. R. Smith	3	0
Smith & Nowinkle	4	0
Total	72	7

ORANGE GROVE FIELD

Company—	No. producing wells completed	Active rigs
Atlantic Refining Co.	2	0
Frank Buttram	0	1
Henshaw Brothers	1	0
H. H. Howell	6	1
W. C. McBride	2	0
T. H. McElvaine	2	0
Magnolia Petroleum Co.	2	0
Plymouth Oil Co.	2	0
Tide Water Associated	2	1
Total	19	3

Productive sands in the Wade City area include not only the Pundt and McNeil sands, but also the Bierstadt sand found around 4,800 to 4,850 ft., between the Pundt and McNeil sands. In addition there is a sand around 5,000 ft., designated as the Alice sand, in which favorable oil showings have been encountered but in which no wells have been completed. Also there are various lesser sands and lenses which have shown mainly gas.



Cementing casing in well to be completed in Wade City field, Jim Wells County, lower Texas coast

Two Distinct Zones in McNeil

The McNeil sand, the principal producing horizon, consists of two distinct zones, designated as the upper and lower McNeil sands. Production from the Pundt sand so far has been largely gas and distillate. The Bierstadt sand usually carries crude oil but in most wells has been passed up, along with the Pundt sand, for the McNeil sand production. In case of unsatisfactory recovery from the latter horizon, wells have been plugged to one of the shallower sands where possible. Twin drilling, however, is being carried on in some instances to prove up the different sands.

Lack of uniformity in productivity of the various sands has complicated development to some extent. The McNeil sand has proved the most consistent, but even in this horizon there has been some variance from location to location in the extent of oil saturation and in producing conditions. In some of the wells all sands may be capable of production, while in adjoining wells one or more of the sands may carry water or gas with little or no oil-saturated zones. There are only a few instances, however, in which production has not been possible in at least one of the sands.

In the Orange Grove area there are only the two previously named producing horizons to date, these being the Blaschke and Pundt sands. A third sand, found below 5,600 ft. and referred to as the Stillwell sand, has shown for distillate production, and in other sands gas and some slight oil showings have been encountered but no wells have been completed in them.

All the known sands of both the Wade City and Orange Grove areas are in the basal Frio and upper Vicksburg section.

Except for one well on gas lift, all production is flowing. The one gas-lift well is Arkansas Fuel Oil Co.'s No. 3 Scott McNeil, a McNeil sand well in the middle of the Wade City field, which found a comparatively thin saturated section in which pressure was not sufficient to flow the well steadily.

Generally, however, favorable pressure conditions exist, and with rates of withdrawal highly restricted under present proration schedules, the field as a whole is expected to have a prolonged flowing life. Allowable allocations are made on a basis of 75 per cent on acreage and 25 per cent on the well, the average daily allowable per well now being around 75 bbl. in the Wade City area and about 100 bbl. in the Orange Grove section, not considering shutdown days.

A 20-acre unit spacing pattern has been followed consistently which has prevented the drilling of an excessive number of wells in the area. Initial potential flows of wells range from around 150 to 300 bbl. on $\frac{3}{16}$-in. chokes, with working pressures from 600 to 750 lb. Gravity of the oil runs from 31° to 32°.

Development in the area has proved unusually attractive due to favorable drilling conditions, sand depths that are not excessive, accessibility of the area, and proximity to tidewater at Corpus Christi, 70 miles distant. Outlets for production are provided by Southern Pipe Line and Continental Pipe Line Co., both of which companies have pipe lines to terminals at Corpus Christi.

Texas Commission to Lower Allowable by 60,000 Bbl.

AUSTIN, Tex., Dec. 10.—Reduction of approximately 60,000 bbl. in the daily Texas allowable crude-oil production probably will result from the emergency hearing conducted by the Railroad Commission here Wednesday, December 11.

Exemptions and new completions since the last order was issued December 1, have increased actual production to more than 36,000 bbl. daily over the estimated demand calculated by the Bureau of Mines.

"The Railroad Commission has compiled a record during the first 9 months of hewing allowable to the Bureau of Mines estimate of demand and we are determined to stay within those limitations," Col. E. O. Thompson, commissioner, declared.

The commissioner said that actual production in Texas during the first 9 months was 0.67 per cent less than the bureau's demand figure.

New completions during remainder of December are expected to add 10,000 bbl. to the daily output and those in January will likely add 15,000 bbl. Consequently, the 25,000 bbl. of daily production from completions in December and January was added to the current excess of 36,465 bbl. in reaching the total of 60,000 bbl. by which allowable will be reduced.

Fields in which exemptions have been granted were the first to feel the retrenchment policy of the commission. Operators in fields with exemption allowables were assigned the burden of proving that physical waste would result from cutting back to the original quotas, or lower.

The December allowable fixed December 1 by the Railroad Commission totals 1,316,660 bbl. daily against Bureau of Mines' estimate of demand which is 1,277,000 bbl. Production for the week ended December 7 was estimated at 1,344,600 bbl. The latest production figure is 27,940 bbl. daily more than the Railroad Commission allowable and 67,600 bbl. over the bureau's estimate of demand. The December order was originally scheduled to have continued through January of next year.

Petroleum Given More Attention At Chemical Engineers Meeting

NEW ORLEANS, La., Dec. 7.—Petroleum is playing an increasingly important part in the programs of the American Institute of Chemical Engineers as may be seen in the thirty-third annual convention which was in progress here December 2 to 6. Fully one-third the papers presented dealt directly with chemical and engineering problems of the refining and producing divisions of the oil industry. In addition, many papers were presented which dealt with modern trends in allied industries and the application of some of these findings could be made in the oil industry.

Dr. E. C. Williams, of Shell Development Co., described briefly the semicommercial manufacture of glycerin from petroleum by the chlorination of propylene. "There is a large supply of the latter available in the refining industry," he said. While the manufacture of glycerin is of importance at this moment, due to its use as a basis for explosives, Dr. Williams stressed also the possibilities of commercializing some of the intermediates including epichlorhydrin, the mono and diglycerol chlorhydrins, glycidol, etc. He stated that no commercial-scale production of the synthetic products has resulted because there has been an ample supply available from other industries but that the refining industry stands ready to augment this supply at any time the market could absorb a large volume. "During the first World War," he said, "the quotations on glycerin rose to 70 cents a pound while at present the price is about 12 cents." Its principal use in the war then was for the manufacture of cordite, a projectile-propellant powder similar to smokeless powder.

Whether Shell would build a commercial plant was not disclosed but it is obvious that the company is in a position to augment the present supplies of glycerin at any time and regardless of the war prospects and its attendant needs, Dr. Williams pointed out that peacetime trends in the mounting consumption of alkyl resins and cellophane guaranteed the future commercial application of the development.

Dealing more closely with current refinery operating problems the use of the "Thermoform" earth-burning kiln was described by T. P. Simpson, E. S. Nicholls, and J. W. Payne, of Socony-Vacuum Oil Co. In refinery operation for more than a year, savings in actual service from $11,000 to $23,000 per 100,000 bbl. of oil percolated, are indicated.

Other important applications of modern engineering in refineries were discussed by J. W. Packie, of Standard Oil Development Co., and L. B. Bragg of the Foster Wheeler Corp., each of whom discussed distillation problems. Mr. Packie said:

"In a typical, complete modern refinery the investment for distillation facilities represents approximately 64 per cent of the total investment in processing units. During 1939 the investment made for new processing equipment in oil refineries in the United States was approximately $110,000,000, of which about 45 per cent was for distillation equipment."

The solvent extraction of lubricants was also discussed as an important and practicable subject and valuable theoretical background was supplied by V. G. Skogan and M. C. Rogers, of the University of Minnesota, who presented the paper, "The Estimated Number of Stages Required in Liquid-Liquid Solvent Extraction of Lubricating Distillates," and J. O. Maloney and A. E. Schubert, of Pennsylvania State College, who discussed "The Rectangular Coordinate Methods as Applied to Solvent Extraction Design."

Production Papers

Of equal importance and timeliness were several papers presented on oil-producing problems. One was delivered by Prof. R. L. Huntington of the University of Oklahoma, and was the product of the work of W. D. Harbert, of Humble Oil & Refining Co., and D. C. Cain, of Duncan-Macklanburg Co., under his earlier direction. This paper was on "The Unsteady Flow of Heat Through Porous Media," and sought to shed light on the problem of recovering added quantities of crude oil from the sands of old and new fields through the application of heat. As an initial step the paper calls attention to the fact that despite modern flowing and lifting methods, about 25 per cent of the oil remains in the formation after the well ceases to be economical to operate. As a step to overcome this the authors undertook to study the flow of heat into a body of well-rounded sand particles which had been saturated with air, water, and lubricating oil.

Another very timely and informative paper was that of E. O. Bennett, of Continental Oil Co., who presented a brief history of condensate recovery from gas fields and then described the full-scale operation of pressure maintenance. Included in this was the "Envelope Curve" of reservoir fluids, supercompressibility, retrograde recovery curves, and data showing the recovery of the retrograde condensate at the separators under varying pressures and temperatures. Considerable time was devoted to a discussion of the economics of the modern plant design and operation.

DEATHS

CHARLES W. MANVILLE, 38, general sales manager for the National Refining Co., Cleveland, Ohio, died December 6 in a Chicago hospital from injuries received in the crash of an air liner near that city on the previous day. Mr. Manville suffered a fractured skull and other injuries.

R. B. BRALY, 66, oil-lease dealer of Eastland, Tex., died December 4 at his home. Mr. Braly went to Eastland during the oil-boom days and engaged in the oil-lease business, which he has followed ever since. His widow, a son and a daughter survive.

JAMES D. KIMBALL, 37, Olney, Ill., died December 5 in an Effingham, Ill., hospital, from injuries received in an oil-field accident a few days prior to his death. Immediate cause of death was a fractured skull. The body was returned to Pearsall, Tex., for burial.

MARIUS ROBISON CAMPBELL, 82, noted geologist, died at St. Petersburg, Fla., December 7. He had been connected for many years with the U. S. Geodetic Survey, and was the author of geological works.

JAMES DUCE, 79, prominent Colorado oil man, died at his home in Los Angeles, Calif., December 6. Mr. Duce had lived in California only a few months, he having lived in Denver, Colo., for 35 years. His widow three sons and a daughter survive.

MILTON McCLELLAN MORTLAND, 74, of Dallas City, Pa., died last week at a hospital in Bradford, Pa., following an illness of a year. He had been placed in the hospital a week before he died. Mr. Mortland was foreman on the George A. Potter leases for 32 years and continued to act as foreman after the property was sold to Sloan & Zook Co. His wife, five daughters and a son survive.

WILLIAM ROBERT GALBREATH, 49, oil operator at Gladewater, Tex., died last week at New Orleans, La. Mr. Galbreath had resided in Shreveport, La., until 10 years ago, when he became an oil operator. His widow and a son survive.

THE MARKETS*

CRUDE OIL: Reductions of 1 to 20 cents in the price posted for crude in 10 fields in the Corpus Christi district of the lower Gulf Coast region emphasized the weakness existing in that part of the state for some time. None of the several companies paying less than the recognized posted price in the lower Gulf Coast section purchase large quantities from outside producers. The aggregate of purchases at less than posted figures is growing and observers feel that the conditions can not spread or even continue indefinitely.

REFINERY: Distillate fuel-oil markets are maintaining their November gains in all sections of the country. Demand is reasonably high. Shipping instructions are closely coordinated with weather conditions. Motor-fuel prices are unchanged in most refining districts. Price concessions are being made on the Gulf as partial offsets to the abrupt rise in tanker-charter rates.

TANK-WAGON AND POSTED DEALER: The cent advance in Texas tank-wagon prices for gasoline lost one supporter this week. One company with state-wide distribution did not meet the advance. Another important marketer returned to the previous price after advancing tank-wagon quotations December 3. The general advance of 0.3 cent per gallon in New York and New England reflects the higher transportation costs from the Gulf to North Atlantic ports.

FINANCIAL: Oil securities continued to taper off into lower ground. Average of 30 representative stocks for the week ended December 7: High, 23.65; low, 22.47; close, 23.10. Week ended November 30: High, 23.89; low, 22.68; close, 23.17.

*Detailed information in Market Section.

International

War . .

Pipe Lines to Carry Balkan Oil to Axis

NEW YORK, Dec. 10.—Rumania took further steps toward complete control of her oil industry last week when the government decreed expropriation of all gathering lines, tank farms and their auxiliary equipment belonging to independent oil companies. Private pipe lines, mainly within the oil fields, aggregate 1,268 miles and comprise all but 472 miles of the country's 1,740 miles of pipe lines. Trunk lines, all of which are owned and controlled by the government, are three in number: One of 198 miles from Baicoi, Ploesti, Buzau, Taurei, Fetesti and Cernavoda to Bucharest, with a daily capacity of 10,300 bbl.; one of 224 miles from Baicoi, Ploesti and Bucharest to the Danube port of Giurgiu with a daily capacity of 7,400 bbl. and one of 50 miles from Baicoi to Bucharest with a daily capacity of from 3,700 bbl. to 4,400 bbl.

The text of the decree expropriating the property follows: "From the date of publication of this law, all petroleum conduits between the oil fields and storage places, and between storage places and refineries will become the property of the state, also pumping stations and parts, reservoirs, installations, buildings and other material necessary for the functioning of the above."

Duplication of facilities, which is said to have resulted in excessively expensive operation, and the claim that small companies were required to pay too high rates for use of the lines were cited as justification for the expropriation. The seizure was legalized on the basis of Article 205 of the 1937 mining law. The expropriated properties will be paid for in bonds to be amortized in 25 years and carrying 3 per cent interest. Valuation of the properties is to be computed at cost less depreciation.

Obviously distorted news reports of the expropriation decree and the meager authentic information that was available made it difficult to evaluate the effect of the decree on individual companies. However, the only American company operating in Rumanian fields is Romano Americana, which, in 1938, was producing 12 per cent of the country's oil and therefore may be assumed to hold at least as large a percentage of the gathering lines. The largest prewar operators in Rumania were the British-Dutch group and British interests, either wholly or partially, accounted for close to 50 per cent of the production.

At the same time the expropriation was announced, D.N.B., official German news agency, reported from Berlin that Germany had signed a 10-year cooperative economic plan with Rumania for development of the Rumanian resources. Ion Dimitruid, secretary general for the Petroleum Commission, signed the protocol for Rumania. Among other things, the Reich agreed to provide technical and financial aid for Rumanian industry and, with the aid of long-term credits, to expand Rumania's transportation facilities, including pipe lines.

Germany, it was announced from Bucharest early this week, will build two pipe lines to enhance delivery of Rumanian oil. One of the new lines will extend from the Danube port of Giurgiu 75 miles north to the center of production at Ploesti. The other line will run 300 miles from the producing fields to a newly developed Danube port at Moldova Noua. Rumania has promised Germany delivery of 3,000,000 tons of oil in 1941, approximately 21,000,000 bbl.

This step undoubtedly will further German influence in Rumanian oil affairs. Before World War I, Germany was a prominent factor in the Rumanian oil industry, and companies, formerly owned by German capital, have been producing almost 25 per cent of Rumania's oil. These holdings were taken over by French, British, Belgian and Rumanian capital after the Treaty of Versailles, and, until recently, only two small German companies, Buna Sperantza and Mirafor, were active in Rumanian oil production, and their role was distinctly minor. With the past year German capital acquired a $1,150,000 interest in one of the major Rumanian companies and close to a $1,000,000 interest in another.

Prior to the war, Rumania's exports were principally from the port of Constantza on the Black Sea. Of a total of 32,209,000 bbl. exported last year, 21,262,000 bbl. were shipped from this port, while only 9,557,000 bbl. were shipped from the Danubian port of Giurgiu and only 1,390,000 bbl. via land frontiers. The bulk of the Constantza shipments were made to western European countries which, because of the British control of the Mediterranean, are now closed to Rumania.

Altogether Rumania provided Germany with 10,017,000 bbl. of oil last year, 3,537,000 bbl. of which were shipped through Constantza, 5,654,000 bbl. via Giurgiu and other Danube ports and 826,000 bbl. by rail. Germany's need of petroleum, coupled with the fact that the bulk of it must come from Rumania by way of the Danube, which is normally frozen over through the greater part of the winter, makes it certain that whatever expansion of transportation facilities takes place will be westward.

Rumania . .

German Domination of Rumanian Oil Grows

GERMAN domination of Rumanian petroleum operations attained through the long series of diplomatic and political moves, now complete to the practical establishment of a protectorate, made prominent appearance in July. Evidence of Reich domination was still inconclusive in the producing and development phases of operations, but Rumanian petroleum distribution data for June and July show clearly the Axis influence.

Closure of the Mediterranean shipping lanes by Italy's declaration of war was the immediate cause of driving Rumanian petroleum exports inland but it had the practical effect of almost doubling the shipments to Germany.

The increase of Rumanian crude-oil production to 128,133 bbl. daily in August compared to 126,462 bbl. in July is also significant in view of the almost uninterrupted decline from month to month earlier in the year. Another trend pointing to German demands on the Rumanian petroleum industry is the increase in drilling. The August report published by Moniteur du Petrole shows that August drilling totaled 98,505 ft., an increase of nearly 50 per cent over 65,810 ft. drilled in July.

The list of countries receiving petroleum exports from Rumania in July dwindled to 10 and includes only six receiving more than 100,000 bbl. per month. There were 17 countries receiving Rumanian petroleum in June and even this group did not include France, England, Belgium and Denmark, all of which are among the peacetime customers. Despite a reduction in the number of purchasing countries in July, the total Rumanian petroleum exports increased to 2,298,235 bbl., a gain of 50 per cent over the shipments aggregating 1,527,965 bbl. reported for June.

Germany's petroleum purchases in July totaled 1,185,225 bbl., more than half of all foreign sales. Purchases by Greece jumped from 69,500 bbl. in June to 241,390 bbl. in July and this change was followed in September by a virtual embargo on Rumanian sales to that country, probably anticipating the Italian invasion effort. The sharp increase in Rumanian oil shipments to Bohemia and Moravia probably indicates an expansion of fuel consumption there in the manufacture of war materials for Germany. Likewise, the precipitous reduction in exports to Turkey may be interpreted as a move by Axis powers to impoverish that country which offers a barrier to the move on Near East oil supplies. Increased shipments to Italy reflect the inability of that country to obtain supplies from the Western Hemisphere since the country became a belligerent.

RUMANIAN PETROLEUM EXPORTS, BY COUNTRIES

(Figures in barrels of 42 gal.)

	1940	
Destination—	July	June
Germany	1,185,225	605,110
Greece	241,390	69,500
Bohemia-Moravia	232,405	86,315
Yugoslavia	175,850	143,365
Italy	170,150	62,195
Bulgaria	106,220	62,430
Slovakia	81,750	5,625
Turkey	79,320	202,745
Switzerland	20,885	2,170
Hungary	5,040	44,590
Gibraltar and Malta	.....	7,930
Lithuania	.....	2,295
Egypt	.....	9,935
Tunisia	.....	26,835
Morocco	.....	103,935
Syria, Lebanon	.....	11,180
Palestine	.....	81,810
Total exports	2,298,235	1,527,965
Ships' bunkers:		
Rumanian vessels	83,985	73,110
Other vessels	9,610	31,730
Total bunkers	93,595	104,840

	1939	
Destination—	July	June
Germany	928,950	272,640
Czechoslovakia	336,780	426,545
England	92,425	282,085
Gibraltar	15,655	270
British India	47,685	.....
Eire	.....	12,685
Italy	304,605	307,935
Albania	9,075	300
France	141,095	165,030
Tunisia	45,835	104,860
Morocco	41,610	34,685
Hungary	137,600	136,540
Yugoslavia	56,485	134,960
Belgium	88,650	112,270
Switzerland	136,705	55,145
Bulgaria	79,025	50,935
Egypt	.....	46,050
Greece	32,865	40,450
Syria	.....	28,675
Turkey	13,390	13,755
Denmark	7,455	.....
Guatamala	.....	330
Total	2,515,890	2,226,145
Ships' bunkers:		
Rumanian vessels	113,365	98,405
Other vessels	40,510	76,245
Total	153,875	174,650

Refinery Expansion

Shell Places Toluene Plant In Operation at Houston

HOUSTON, Tex.—Shell Oil Co., Inc., this week placed in operation a new toluene plant at its refinery here, the plant being completed more than a month in advance of schedule. Construction work on the $500,000 plant was started in August and continued night and day so that its early completion was made possible. The plant was constructed by C. F. Braun & Co., Alhambra, Calif., and will have an annual production of more than 2,000,000 gal. of TNT-grade toluene. The plant is producing the basic explosive material by a new process developed by the Shell Development Co.

In addition to the method being used by Shell at its Houston plant, the company recently announced the research organization has perfected a second process, complementary to that used at Houston. By utilizing this second process, Shell can produce more than 7,000,000 gal. of toluene annually at the Houston refinery. The first process will enable the company to produce sufficient toluene for manufacturing about 20,000,000 lb. of TNT, thus the Houston plant could produce sufficient toluene to make about 100,000,000 lb. of TNT annually.

Wisconsin Refinery Making Initial Test Runs

SHEBOYGAN, Wis.—Test runs at the new refinery of Wisconsin Oil Refining Co. here are getting under way, and when completed the plant will be placed in full-scale operation to give Wisconsin its first oil refinery. The 5,000-bbl. crude-capacity plant is operating on Illinois crude oil, which is being shipped from the southern part of that state at a rate of 13 cents per hundredweight. Products of the plant include gasoline, kerosene, distillates, burning oils, and fuel oils which will be marketed by rail in northern and eastern Wisconsin and Upper Michigan.

The Wisconsin company, headed by Dewey E. Foster, plans to start construction of a Dubbs cracking unit and U.O.P. polymerization unit about January 1 of next year. Capacity of the cracking unit will be 2,500 bbl. daily.

Mid West Adds Cracking Unit in Grandville Refinery

MOUNT PLEASANT, Mich. — The new 2,500-bbl. Dubbs cracking equipment being added to the Grandville, Mich., refinery of Mid West Refineries, Inc., is taking finished form. John G. Marshall, vice president and manager, has carefully balanced the capacity of the new cracking equipment with that of the skimming equipment to effect the most economical and effective use of the Illinois crude now coming to the plant by tank car. The plant is located on water so that deliveries of crude from other sources could also be made by water. This company also operates a 3,200-bbl. skimming and cracking plant at Alma, Mich.

Falls City Refinery Soon To Be Placed on Stream

FALLS CITY, Neb.—Plant of the Mid-States Refining Co. near here is in the process of completion and is expected to be placed in operation soon. The 2,500-bbl. plant was acquired by the company at Neosho Falls, Kans., and moved to Falls City where it was reerected. Carrier of the Independent Pipe Line Co. from the Falls City field has been completed and crude is being run to 10,000-bbl. storage provided at the plant. The Mid-States company, of which R. D. Swan is president, is now laying a line to the Missouri-Pacific tracks here for loading out finished products.

Shell to Add Solvent Extraction Plant at Wood River Refinery

WOOD RIVER, Ill.—Plans for construction of a solvent-extraction plant, the first of its kind in the Middle West, have been announced by R. C. Roberts, manager of the Shell Oil Co., Inc., refinery here. It will be the first plant ever to produce high-solvency naphthas and odorless cleaning solvents successfully from Mid Continent crude oils. The new plant, to be located at Shell's Wood River refinery, will cost $550,000 and will go into operation early next summer. Its construction is being carried on entirely separate from the $10,000,000 refinery-expansion program announced early this year and now in its final stages at Wood River.

Natural Gas

Gas Production in Texas Is Higher During October

AUSTIN, Tex.—Substantial gains in Texas' gasoline production were indicated by the October monthly summary of the Railroad Commission, as production of natural gas totaled 4,407,707 M.c.f. daily. This volume was the second largest yet produced during any one month, being exceeded only by March 1939, the report stated. This gas output was an increase of 97,990 M.c.f. daily over September 1940 and 530,998 M.c.f. more than October 1939.

Sweet dry gas produced during October totaled 2,401,396 M.c.f. daily and sour dry gas 680,837 M.c.f. daily. These volumes of dry gas were disposed of as follows: Extraction loss, 7,456 M.c.f.; 642,299 M.c.f. to pipe lines for light and fuel; 187,209 M.c.f. to lease operations and drilling; 100,631 M.c.f. to gas lift; 1,400,941 M.c.f. to gasoline plants, and 743,698 M.c.f. to repressuring.

Totaled casinghead gas production reported was 1,306,282 M.c.f. daily, of which 82.50 per cent went to gasoline plants, 10.11 per cent to repressuring, 2.75 per cent to pipe lines for fuel and light and the remaining 4.64 per cent to lease operations and drilling, gas lift and vented to air.

Of the total gas produced daily during October, 4,407,707 M.c.f., ultimate disposition was shown as follows: 3.85 per cent to extraction loss, 29.45 per cent to pipe lines for light and fuel, 13.73 per cent to plant fuel and lease operations, 2.84 per cent to gas lift, 20.18 per cent to carbon-black plants, 6.64 per cent vented and 23.31 per cent to repressuring.

Indicative of the increase in natural-gas production was the summary of gasoline-plant operations. During October gasoline plants took a daily average of 2,497,838 M.c.f., which was more than half the production for the month. From this amount of gas 2,297,061 gal. of natural gasoline per day was extracted. It is interesting to note that these plants took more gas during the months of January, February, March and April than during this month; yet the amount of natural gasoline extracted was greater than any month during the year, indicating a much higher recovery per 1,000 cu. ft. of gas. This amount of gasoline produced or extracted during October was less than was produced a year ago by 10,069 gal. per day, but more than September 1940 by 83,393 gal. per day.

The 36 carbon-black plants in Texas took 889,549 M.c.f. per day during the month, from which there were produced 1,315,773 lb. of black or 1.479 lb. per 1,000 cu. ft. of gas. This was an increase in carbon-black production of 24,596 lb. daily over September 1940, but a decrease of 53,828 lb. compared with October 1939.

Deliveries to pipe lines for light and fuel amounted to 1,298,076 M.c.f. daily which was a slight gain over September of 6,858 M.c.f. daily. Compared to October a year ago deliveries were off 74,575 M.c.f. per day.

News of Pipe-Line Activity, which was formerly found on this page, will be found on Page 65.

Men engaged in constructing the 2,500-bbl. cracking unit at Grandville, Mich., for Mid West Refineries, Inc. (Ends) Ben Thruston, superintendent, and Jack Thruston, assistant superintendent for Mid West; (center) J. M. Hadley, superintendent for Frick-Reid, contractors. At right is a construction view of the plant

Natural Gasoline

California Natural-Gasoline Output Higher in October

LOS ANGELES, Calif.—Production of natural gasoline in California during October totaled 51,514,967 gal., the Bureau of Mines has reported here. This compared with a monthly production of 48,421,827 gal. during the preceding September. Thus on a daily basis production was higher in October than in September by about 50,000 gal. The total production represented the output of 87 plants with daily operating capacities totaling 1,980,300,000 cu. ft. Following is a summary of the plants' operations during October:

	Gas treated (M.c.f.)	Natural gasoline produced (gal.)
San Joaquin Valley:		
Belridge	3,690,726	2,228,440
Elk Hills	191,827	219,520
Kettleman Hills	8,493,975	12,037,311
Midway-Sunset	882,762	1,860,108
Mountain View	186,437	273,603
Miscellaneous	1,560,304	1,140,656
Coastal district:		
Elwood	333,734	428,964
Santa Maria	193,663	462,240
Ventura Avenue	3,445,562	5,139,027
Miscellaneous	650,439	690,780
Los Angeles Basin:		
Brea-Olinda-Coyote	429,363	1,543,856
Dominguez	1,329,165	2,027,529
Huntington Beach	731,979	2,616,423
Long Beach	2,236,553	7,660,810
Montebello	2,426,704	2,281,836
Richfield	225,284	687,169
Rosecrans	1,376,538	1,507,902
Santa Fe Springs	1,285,421	4,898,335
Torrance	223,665	732,828
Miscellaneous	1,653,836	3,077,630
Total (all fields)	31,547,936	51,514,967

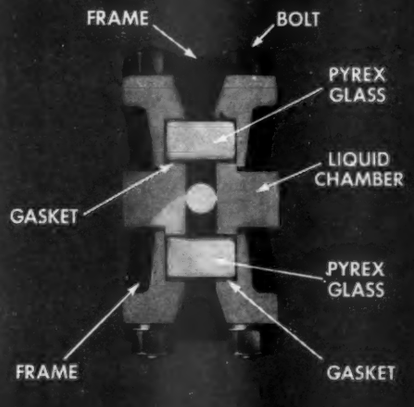
PENBERTHY

DROP FORGED STEEL

TRANSPARENT

LIQUID LEVEL GAGES

To observe the color or density of liquids under high pressures and/or temperatures



Made of alloy temperature resisting steel. Liquid chamber for single or multiple section gage is made of a solid block of steel the full width of frame to assure perfect alignment and rigidity. Frame has an extra heavy beam at each end and glass chamber is accurately machined to the contour of the glass providing full metal backing for the gaskets. Pyrex glass has greater resistance to thermal shock and erosion.

These gages are available in any length and for various pressures and temperatures. We shall be glad to quote upon your requirements. Write for new Catalog 34-A.

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PENBERTHY PRODUCTS

CANADIAN PLANT:
WINDSOR, ONTARIO

PROGRAMS AND MEETINGS

East Texas A.P.I. Chapter Elects New Officers

The East Texas chapter of the American Petroleum Institute met Tuesday night at Kilgore, Tex., and heard a paper by N. N. Jones, of Humble Oil & Refining Co., on "Practical Uses of Subsurface-Pressure Measurements in the East Texas Field." The chapter also elected officers for the coming year. E. B. Miller, Jr., Tide Water Associated Oil Co., Kilgore, Tex., was elected chairman. Other officers are Robert M. Bass, Kilgore, Tex., vice chairman; Murray C. Seils, Seils Petroleum, Inc., Longview, Tex., vice chairman; B. E. Moir, Atlantic Refining Co., Longview, Tex., vice chairman; D. M. Kerr, Lufkin Foundry & Machine Co., Kilgore, Tex., secretary treasurer; and John H. Murrell, Shell Oil Co., Kilgore, Tex., assistant secretary-treasurer.

Geologists to Hold Post Christmas Meeting at Austin, Tex.

It is expected that more than 1,000 of the nation's outstanding geologists will meet in Austin, Tex., December 26 to 28, when the University of Texas will be host for the fifty-third annual meeting of the Geological Society of America. Affiliate branches of the society as well as the American Association of Petroleum Geologists will convene jointly, Dr. E. H. Sellards, chairman of the local committee, has announced.

Approximately 100 technical papers, ranging from petroleum in national defense to this year's geological discoveries, and 11 scheduled field trips, will fill the 3-day program.

Oil Scouts Pick Dallas as 1941 Convention City

Officers and directors of the National Oil Scouts and Land Men's Association, met December 7 at Dallas, Tex., and selected Dallas as the 1941 convention city. The convention will be held May 29-31, and headquarters will be at the Adolphus Hotel. It is expected that the convention will draw 400 delegates to Dallas from a membership scattered throughout the Mid-Continent.

East Texas Section of A.I.M.E. Names 1941 Officers

The East Texas section of the American Institute of Mining and Metallurgical Engineers has selected its officers for 1941 terms, the election taking place on December 3. N. N. Jones, Humble Oil & Refining Co., was elected chairman. Other officers are: E. L. Rawlins, Union Producing Co., vice chairman; E. H. Blum, Atlantic Refining Co., vice chairman; M. L. Mayfield, Cities Service Oil Co., secretary-treasurer. Elected to the board of directors for 2-year terms were: E. DeGolyer, DeGolyer & McNaughton; E. L. Caster, Arkansas Fuel Oil Co., and J. W. Steele, Federal Tender Board. Elected to the board of directors for 1-year terms were: H. F. Winham, Shell Oil Co., Inc.; T. W. Johnson, Union Producing Co., and R. H. McLemore, Sun Oil Co.

Oklahoma Stripper-Well Operators Will Meet in Tulsa

The featured speaker on the program of the annual meeting of the Oklahoma Stripper Well Association, which will be held in Tulsa, December 13, will be William J. Armstrong, conservation officer of Oklahoma, and member-elect of the Corporation Commission. Congressman Wesley E. Disney, who had been scheduled to appear before the meeting, will be unable to be present, owing to pressing duties in Washington in connection with the defense program.

Power Association Will Gather In Baton Rouge This Week

The Petroleum Electric Power Association will hold its twelfth annual conference at the Heidelberg Hotel, Baton Rouge, La., December 12 and 13. An interesting program has been arranged, and subjects that will come up for discussion include selection of prime movers at the Baton Rouge refinery, East Texas production, power generation and distribution problems, high-speed gas engines, Illinois field methods, and others.

Louisiana Engineers Select New Orleans For Annual Meeting

The 1941 annual meeting of the Louisiana Engineering Society will be held January 10 and 11, at the St. Charles Hotel, New Orleans, La. An outstanding technical program has been arranged, including papers by engineers of national reputation. In addition, a varied program of inspection trips and an entertaining social program has been provided.

I.P.A.A. Outlines Program

The 1941 program of the Independent Petroleum Association of America in relation to current conditions and expected developments in the petroleum industry, were explained at a luncheon held Wednesday, December 4, at the Tulsa Club, Tulsa. The luncheon was attended by approximately 100 members located in the Tulsa area.

Elmo Thompson, executive vice president of the Sunray Oil Co., Tulsa, and a vice president of the association, presided at the luncheon. Frank Buttram, president of the association, and Charles Van Vleck, field manager, were the principal speakers.

Illinois-Indiana Petroleum Association Elects Officers at Annual Meeting

The annual business meeting and election of officers and directors of the Illinois-Indiana Petroleum Association was held in Robinson, Ill., December 2. The following officers were elected for the ensuing year:

President, Alex U. McCandless, Mahutska Oil Co., Robinson, Ill.; first vice president, C. C. Carroll, Ohio Oil Co., Marshall, Ill.; second vice president, A. F. Lager, Siosi Co., Terre Haute, Ind.; treasurer, T. B. Steele, Kewanee Oil Co., Robinson, Ill.; secretary, R. B. Kelly, Pure Oil Co., Olney, Ill.; executive secretary, Lee Mulvihill, Illinois-Indiana Petroleum Association, Robinson, Ill.

In addition to the officers elected, Frederick Grumme, Premium-Bolyard Co., Indianapolis, Ind., and Merle Becker, W. C. McBride, Inc., St. Louis, Mo., were elected to the executive committee, which committee consists of the officers plus two additional members.

The directorate of the association for 1941 is as follows:

J. T. Cumbie, Magnolia Petroleum Co., Mattoon, Ill.; William S. Corwin, Tide Water Associated Oil Co., Robinson, Ill.; H. N. Pardee, Texas Co., Tulsa; T. B. Steele, Kewanee Oil Co., Robinson, Ill.; A. L. Lager, Siosi Co., Terre Haute, Ind.; Frank B. Barnes, Craig & Lowrie, Robinson, Ill.; William Bell, Bell Brothers, Robinson, Ill.; R. B. Kelly, Pure Oil Co., Olney, Ill.; C. C. Carroll, Ohio Oil Co., Marshall, Ill.; Frederick Grumme, Premium-Bolyard Co., Indianapolis, Ind.; John Baldwin, Snowden & McSweeney Co., Bridgeport, Ill.; Alex U. McCandless, Mahutska Oil Co., Robinson, Ill.; E. G. Robinson, Shell Petroleum Corp., Centralia, Ill.; Merle Becker, W. C. McBride, Inc., St. Louis, Mo.; P. E. Taggart, Big Four Oil & Gas Co., Bridgeport, Ill.; Asa Lee, Kingwood Oil Co., Effingham, Ill.; E. J. Reading, Sun Oil Co., Evansville, Ind., and C. J. Haas, Adams Oil & Gas Co., Centralia, Ill.

ALEX U. McCANDLESS

Mr. McCandless, with other associates, formed the Mahutska Oil Co., in 1906, and started operations in the Crawford County, Illinois, oil fields. In 1908 he took charge of the company, which has operated in 11 states. He has remained president of the company for more than three decades. In addition, he is president and director of the Illinois-Indiana Petroleum Association, director of the Independent Petroleum Association of America, and is a member of the American Petroleum Institute

CALENDAR

December

PETROLEUM ELECTRIC POWER ASSOCIATION, Heidelberg Hotel, Baton Rouge, La., December 12-13.

OKLAHOMA STRIPPER WELL ASSOCIATION, Tulsa, December 13.

MID-CONTINENT OIL AND GAS ASSOCIATION, annual meeting of general board of directors, Tulsa Club Roof, Tulsa, Okla., December 16.

GEOLOGICAL SOCIETY OF AMERICA, fifty-third annual meeting, University of Texas, Austin, Tex., December 26-28.

1941

January

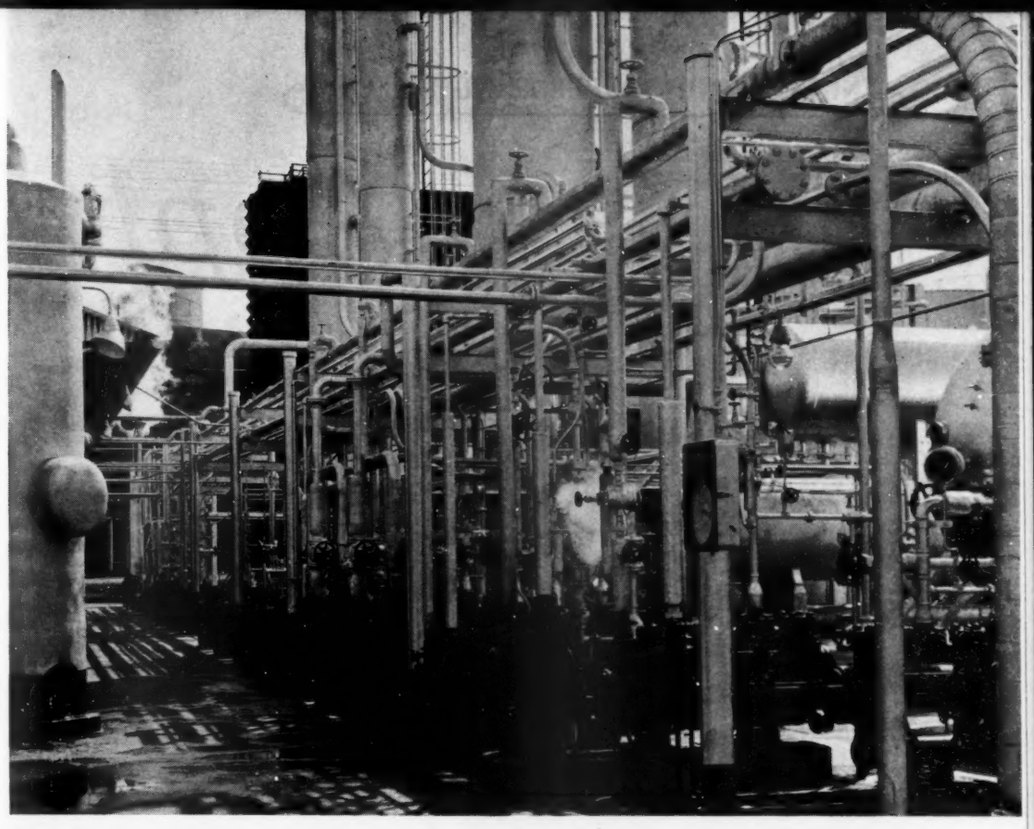
SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book-Cadillac Hotel, Detroit, Mich., January 6-10.

LOUISIANA ENGINEERING SOCIETY, annual meeting, St. Charles Hotel, New Orleans, La., January 10-11.

LIQUEFIED PETROLEUM GAS ASSOCIATION, eastern section, regional meeting, New York, January 16-17.

COMPRESSED GAS MANUFACTURED GAS ASSOCIATION, INC., annual meeting, New Nork, January 20-21.

NORTHWEST PETROLEUM ASSOCIATION, Radisson Hotel, Minneapolis, Minn., January 23-24.



In refineries and natural-gasoline plants the trend is toward placing more and more of the piping above ground, either on raised supports or at ground level. This acts to reduce corrosion of the lines, makes possible easy detection of leaks and facilitates their repair. The accompanying photograph shows how the lines are supported on trestles at one large alkylation plant of the sulfuric acid type.

ENGINEERING & OPERATION

In This Section

DECEMBER 12, 1940

Applying Tool J At Remote

By NEIL WILLIAMS

BECAUSE of the advantages of being able to replace worn tool joints in the field, oil operators and manufacturers for some time have given consideration to the development of tool joints that not only simplify their application in the field but also eliminate the chances of improper fitting that have existed when this work is done without mill or machine-shop facilities.

With such tool joints now being designed and manufactured, replacement of tool joints in the field is expected to become more general practice. This is due to result in important savings and conveniences to operators, who, in following the practice of transporting their strings of pipe to qualified machine shops for tool-joint replacement, incurred not only heavy hauling and handling expense but also costly delays in drilling.

Originally, it was the practice to put tool joints on the pipe in the field but due to the hazards of breakoffs and failures that resulted from inability to control the amount of torque applied while tightening the tool joints, operators found it advisable to have this work done in mills and qualified machine shops where facilities were available to insure proper installation. The newer types of tool joints and methods of application are such, however, that the necessity for this control is removed, and installations can be made about as effectively in the field as in the shop.

Adaptation of screw-type tool joints to field application has been accomplished largely by redesigning of tool joint-pipe connections with the development of shrink-grip features. These features provide for "shrinking" the tool joints onto the pipe to effect their seal. By heating, which expands the metal, the tool joints are fitted to proper position, accurately predetermined, where, as the metal contracts by cooling, they are securely bonded.

Methods followed in application of "shrink grip" or "shrink thread" tool joints to drill pipe in the field were described in a previous issue of The Oil and Gas Journal.[1] Field application of tool joints has been recently simplified by the development of the Reed Super Shrink Grip tool joint which can be installed on the drill pipe without the use of bucking-on machines or other elaborate tools. The joint is designed with an extra length of gripping surface to provide a greater bond with the pipe and further relieve the strain on the threads, and also contains an inner-ring seal, or gaging shoulder, that fits against the end of the pipe. The latter not only serves as a fluid seal, but also as a definite reference mark in sizing the tool joints. The tool joint is screwed on until the gaging shoulder hits the end of the pipe, this being the only position in which it fits.

As a result of the new developments in design of tool joints, their replacement has resolved itself mainly into a mechanical problem of cutting off the old tool joints and screwing on the new. The method of removing the old tool joints and replacing with the latest-type tool joint is somewhat similar to the practices described.[1]

The first step is that of removing the old joints from the pipe. This is accomplished by cutting the joints off with an acetylene torch. A tangential cut is made along the side of the joint, removing the metal down to the crests of the pipe threads but not touching them. The welder starts the cut at the pipe end of the joint and progresses toward the tool-joint end. When this tangential cut has been made to a point about 1 in. beyond the end of the pipe, the welder cuts a rectangular hole radially toward the center of the joint. This hole is about ¾ in. wide and about 1½ in. long. Next, a radial cut is made from this hole to the end of the joint.

This completes the necessary operations with

1. Field Application of Tool Joints, Harry F. Simons, The Oil and Gas Journal, Oct. 17, 1940, p. 47.

Fig. 1—The start of the cutting-off operation with the acetylene torch. Fig. 2—Care is exercised in cutting away tool-joint metal over the pipe threads so as not to touch the threads or the land on the pipe. Fig. 3—A notch for a wedge is cut between the tool-joint shoulder and the end of the pipe, care being exercised not to touch the end of the pipe. The cut is continued through the tool-joint threads to the end of the tool joint. Fig. 4—Driving wedge in notch to spread open tool joint and expand the joint, making it free to turn on the pipe. Fig. 5—The tool joint is then easily unscrewed from the pipe by hand. Fig. 6—After removal of the old tool joint, clean, good-as-new threads and sealing land are in evidence, and ready to receive a new tool joint

Joints to Pipe Locations

the torch. A wedge then is driven into the rectangular hole to loosen the joint from the pipe, making it easy for the operator to unscrew the joint. This operation, when properly done, leaves the end of the pipe in excellent condition and ready to receive a new joint. The joint-removing operation is carried on by the welder just ahead of the men applying new tool joints so that there will be no unnecessary waiting. Because of the inner seal, when the new-type tool joint is removed from the pipe, the threads are left clean, and only a visual inspection is needed to see that no damage has been done to the pipe.

However, the pipe is carefully checked for straightness, and those joints that need attention are set aside. If the reclaimed string contains a number of bent pieces of pipe, the result will be rapid and excessive wear on one side of the tool joints between these pieces.

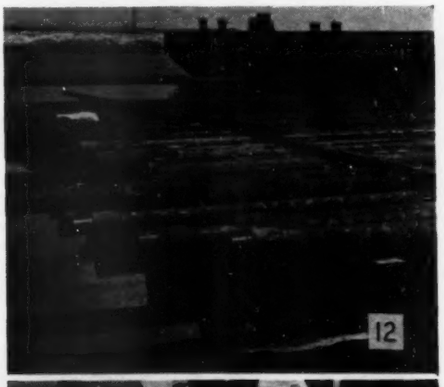
Before a new tool joint is put on the pipe the threads are coated very lightly with a zinc-base lubricant, and the end of the pipe is coated with a thin layer of red lead. The thin coat of zinc-base lubricant keeps the threads protected so that on subsequent replacement operations they will be bright and need no attention.

Prior to application the new joint must be heated to a temperature of 650° to 675° F. This heating is done by small, inexpensive heaters designed especially for this purpose. These heaters weigh about 75 lb. each and are very easy to handle. Heat is applied by burning either natural gas or bottled butane gas. The tool joint is left in the heater long enough to come up to heat, at which time its temperature is checked by rubbing a lead stick on the outer surface. Lead melts at 621° F., therefore, when the lead starts to melt, the operator knows that the joint is up to the proper temperature.

The operator then removes the hot joint from the heater, using a special brace-type wrench which he screws onto the tool joint. The joint is screwed vigorously onto the pipe until the gaging shoulder inside the joint strikes the end of the pipe. This occurs with a sudden jar which indicates to the man handling the wrench that this joint has gone "home" to its proper position. As the joint cools, the threads, shrink grip and gaging shoulder shrink to a predetermined tightness. This tightness, due to shrinkage, is held within the elastic limit of pipe steel. For this reason the pipe is not deformed by unnecessarily high pressures and will be exactly to gage when the joint is removed for the reapplication of additional tool joints. As soon as the tool joint engages the end of the pipe it begins to cool instantly as the heat is conducted very rapidly into the cool piece of pipe.

The rate of application of this type tool joint naturally is dependent upon the number of men employed and the number of heaters used. One heater used on one end of the pipe will heat one-half of a tool joint, either pin or box, to the proper temperature in approximately 10 minutes. This means that the rate of application on one end of the pipe is six ends per hour. By using two heaters the rate would be doubled and 12 ends could be applied per hour. By using two heaters on each end of the pipe the rate of application would be 12 complete pieces of pipe with tool joints on each end per hour. To maintain the rate of 12 complete pieces per hour, the services of one welder and two other men on each end of the pipe, a total of six men, would be required. A seventh man, familiar with details of the job, should be on hand to supervise the work.

Ability to replace tool joints at the well location is of particular advantage to many operators on the Gulf Coast. There many of the fields and wildcats are in remote, isolated locations from where transportation of strings of drill pipe to shops would entail long hauls by water routes or marsh roads. The fact that a well might be on a remote water or marshland location, using piling foundations or a drilling barge, does not hamper the work of replacing tool joints on the job, as the work requires little space. It is only necessary to have just enough room at each end of the pipe rack to accommodate the small heater provided. The job illustrated in the accompanying pictures was one done on a small platform surrounded by water.



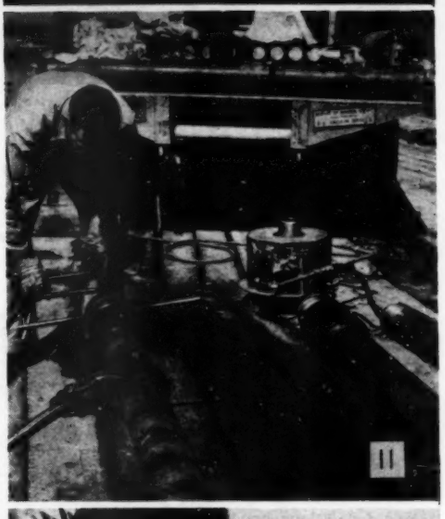


Fig. 7—The new tool joint (pin end or box end) is placed in small portable gas-fired heater. Fig. 8—A lightweight brace-type wrench is attached to the heated tool joint preparatory to handling. Fig. 9—The new tool joint, heated to approximately 650° to 675° F. is lifted from the heater by means of the wrench. Fig. 10—The heated tool joint is carried on the wrench to the end of the pipe, to which it is to be attached. Fig. 11—By means of the brace-type wrench the heated tool joint is quickly screwed onto the drill pipe until the shoulder within the tool joint seats on the end of the drill pipe. Fig. 12—This series of pictures was made on a location surrounded by water which provided unusually limited working space for applying the tool joints

Left: Washing Marsh funnel before and after taking a test keeps it in good condition. Center: Obtaining the time in seconds gives the Marsh funnel viscosity. Right: The mud hydrometer seen standing at the back of the bench is the most widely used method for determining density of drilling fluid

Determining Properties of Rotary Drilling Fluids

By HARRY F. SIMONS

This fifth article dealing with drilling fluids discusses tests used in the field and laboratory to determine the various mud properties. The advisability of enlarging the ordinary rig tests, which at present include only weight and viscosity determinations, is pointed out. Also relation of laboratory tests to field tests is treated. Previous articles of this series appeared in the September 26, October 10, October 31 and November 21 issues of The Oil and Gas Journal.

THE qualities of rotary drilling fluid are constantly changing due to the effect of the various formations encountered and their content, the agitation of the drill pipe and the thixotropy of the mud. The mud is often purposely altered through the addition of chemicals or admixtures to combat some unusual condition or obtain some desirable effect. There are also some fields where the weight, viscosity and water loss must be kept within a very narrow range. This makes it necessary to test the quality, or characteristics, of the mud on a drilling well at more or less frequent intervals, depending on the seriousness of the situation.

The lack of instrumentation on most drilling rigs has been pointed out by Hayward[20] and he is undoubtedly justified in his comments. This lack of equipment to gage accurately the conditions in the well is particularly noticeable in the control of mud, the only two testing devices consistently seen on drilling rigs being those for determining weight and viscosity. Often the information obtained from the use of these devices is recorded haphazardly with no effort being made to correlate conditions or treatment with the weight and viscosity changes. In areas where drilling mud is a serious problem, more attention is now being paid to not only obtaining the necessary information but recording it on a form easily interpreted.[13] In addition these rigs are often equipped with all of the instruments necessary for the testing of the drilling fluid.

As pointed out previously, the qualities, or characteristics, of the mud which affect its performance are density, viscosity, wall-building properties, thixotropy, pH (acidity or alkilinity), sand content, salinity and particle size. Tests to determine the first two qualities are performed at intervals of 15 minutes on some wells and 24 hours on others. Wall-building properties and thixotropy may need to be determined several times a day on some wells, but many wells are drilled without any tests being made for these qualities. The latter four qualities are determined as needed on the more serious wells and practically never on wells in areas experiencing little or no difficulty.

Equipment to perform rough determination of all these qualities is not expensive in comparison to the investment in the drilling rig. A set routine for testing and logging the first four qualities listed above should repay the drilling contractor or operator by indicating possible mud savings or overall drilling-time reductions.

Density

Obviously, the way to determine density or weight per unit volume, is to weigh a specified amount of the drilling fluid. In some parts of the United States, the density is recorded in pounds per gallon and in others in pounds per cubic foot.

The three instruments most commonly used are the mud hydrometer, the beam balance and the spring scale. The latter is obviously open to wide errors as the tension in the spring changes. The beam balance which has recently been introduced and is coming into wide use is both rugged in construction and yet capable of accurate measurements; it includes a constant volume cup. Several years ago the familiar cotton scale was used.

The mud hydrometer consists of calibrated stem on a float spindle with a detachable bakelite cup. The cup is filled with the mud to be weighed, screwed on the spindle and immersed in water, the reading being taken on the graduated scale at the water level. This is probably the most widely used instrument for determining the density of drilling fluid. Both the mud hydrometer and the mud balance have several graduations. The mud hydrometer can be obtained with pounds per square inch per 100 ft. depth (A.P.I. density), specific gravity and pounds per gallon or pounds per cubic foot scales. The balance is graduated in A.P.I. density and either pounds per gallon or pounds per cubic foot.

Simple as these instruments sound, there are some wide variations in readings obtained through misuse and abuse. The mud balance depends for its accuracy on the maintenance of a constant volume in the cup and if this member is dented, erroneous results will be obtained. The density of the mud can be easily obtained, regardless of volume changes, by first weighing a cup full of water and then filling the cup with mud; the accuracy of the balance can be determined in this manner. Another necessity is the complete filling of the cup and careful washing or wiping of the exterior to insure against weighing an excess of mud.

Instructions accompanying the mud hydrometer should be followed implicitly if continuously accurate results are to be obtained. Most misreadings come from the failure of the workmen to take reasonable care in seeing that the water in the outer case, in which the instrument is immersed, is kept at or around 70° F. As the instrument is based on a direct comparison of the specific gravity of water and the mud, any change in the water is immediately reflected in the latter. The water should also be kept clean. Another way of insuring accuracy is to weigh water first and then weigh the mud and adjust the mud reading accordingly. The accuracy of the instrument can be checked by weighing water and if any correction is needed, removing some of the shot from the interior of the stem. This should be done by

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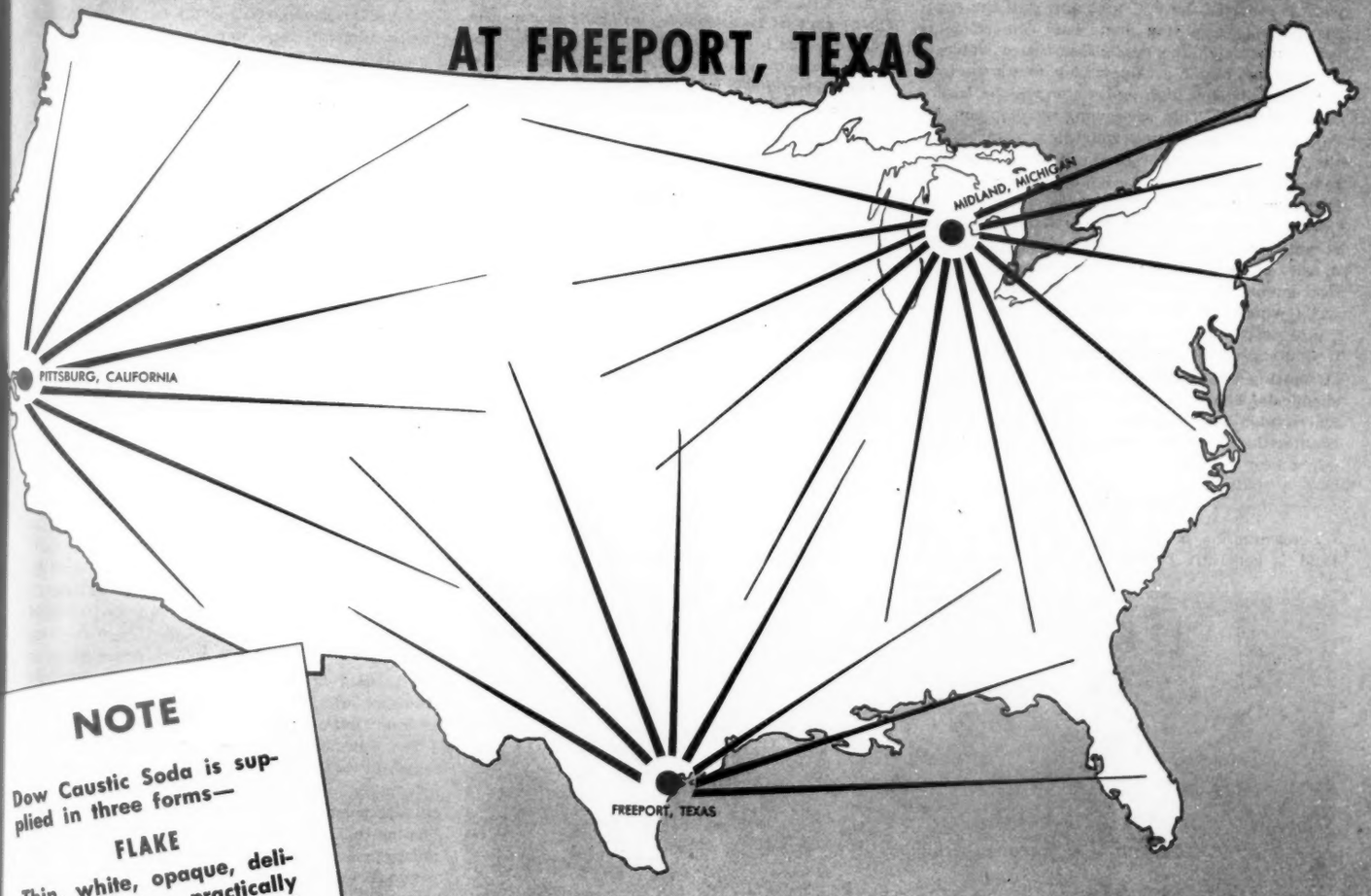

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someone who completely understands the instrument and should only be necessary at long intervals.

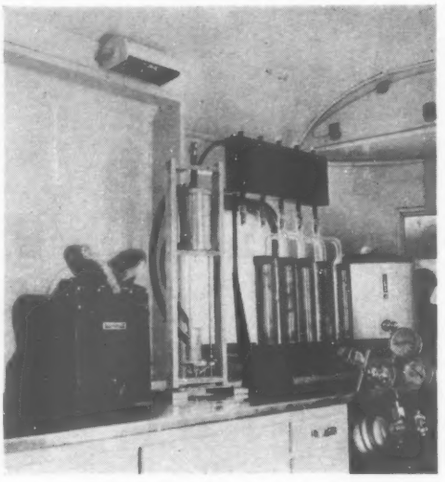
Leaving the instrument floating in the water also leads to erroneous values being indicated when the mud is weighed. The metal in the instrument corrodes at the air-water contact and as the instrument sways in the breeze or bobs up and down, the corrosion is distributed over considerable area. This results in a reduction in the volume occupied by the stem which cannot be calibrated out and the instrument will either have to be discarded or the erroneous readings accepted. The hydrometer should be washed and wiped dry after each use.

The correct handling of this instrument is not an academic question as mishandling will directly affect the costs of the mud used on the well. Drillers generally have instructions to maintain the mud at a certain density. If a density under that value, obtained by using cold water in the case, is reported, he will probably give the order for adding weighting material. The relieving crew may weigh the mud using warm water in the case and obtain a value which shows the mud density to be too high and water will be turned into the ditch. This see-sawing may go on for days, one driller adding weighting material and the other adding water to the drilling mud. The same is true of the viscosity determination if it is not performed properly.

There has been several instruments introduced recently for the continuous recording of the density of the drilling fluid. The expense of such instruments eliminates them from use except on wells where the mud problem is quite severe. These instruments will show the variation in weight caused by salt-water intrusion, gas cutting, air cutting and addition of water, admixtures or chemicals. They are particularly useful in areas where high gas pressures are likely to be encountered and where recirculation of gas-cut mud might lead to a blow-out.

Viscosity

Determination of the viscosity of the drilling fluid is generally by either the Marsh (A.P.I.)



Filter press used for determining wall-building properties and water loss is in the center with air-bottle for supplying pressure at lower right. Other instruments are for examining drilling mud for oil content and for core analysis

funnel or the Stormer viscosimeter. The Marsh funnel has standard dimensions and can be found on practically every drilling rig but there are wide variations in the manner in which it is used.

The mouth of the funnel has an 8-mesh screen through which mud to be tested is passed to remove the larger solid particles. The funnel is filled with the mud sample obtained from a part of the system where the agitation is quite violent (from the flow pipe or under the mud screen). A finger held over the bottom tube will allow the 1,500 cc. to fill the funnel to the screen. The mud is then allowed to flow from the funnel into a container (a quart milk bottle or a graduated enamel cup), the time for 1 qt. to run from the funnel being recorded in seconds.

Variations of this method are used. In one, 500 cc. are poured into the funnel and allowed to run out, the end point being when the mud starts to drip from the tube. Another is to put a quart, instead of 1,500 cc. in the funnel and run either a pint or quart out. The first of these variations is widely used and is called the drip method. The others are merely individual custom.

The time in seconds varies more or less widely with the different methods. In addition, some roughnecks have the idea that only 1,000 cc. should be run out as there is a line on the inside of the enamel receiving cup marking that amount. This also gives an erroneous reading. Unless the manner in which the test was taken is specified, the test means little. This has led some contractors to place on their log books alongside the heading "Viscosity," the instructions "1,500 cc. in, 1 qt. out."

The funnels often do not receive the best of care and in addition to having the body dented, may have the tube distorted, mashed, enlarged, or shortened. Failure to wash the funnel after each test will cause incorrect results. The funnel should give a reading of 26 seconds for fresh water at 70° F.; a variation of plus or minus 0.5 second and plus or minus 5° is permitted.

Failure to take the test properly may result in the mud being treated unnecessarily to adjust the viscosity. In one case, a roughneck sawed off the tip of the tube because it was damaged and got an erroneous reading. The man relieving him crimped the end of the tube together so the instrument showed the correct viscosity for water but gave a false reading for mud. The mutilation of the funnel went on for a couple days while admixtures and water were added alternately in an attempt to keep the viscosity at the desired value.

The objection to the funnel method is that only over a very limited range of muds can the figure obtained be regarded as a real indication of viscosity. It is impossible to compare different types of mud but this instrument does afford a periodical comparison of the mud coming from a well, provided the type of mud does not change substantially.

Stormer Viscosimeter

A large number of instruments have been developed for the measuring of viscosity with each incorporating some special thought of the designer. These range from the extremely complicated apparatus to small balls which are allowed to sink in the mud. Evans and Reid[32] describe most of these in detail. The instrument most widely used in the United States is the Stormer viscosimeter and some drilling rigs and practically all mud laboratories include it in their equipment.

The Stormer instrument consists of a spindle which is rotated in a test cup by a pair of gears driven by a falling weight, the rotation of the spindle being indicated by a revolution counter. The instrument is calibrated with standard liquids, although as Evans and Reid[32] point out, the calibration curves are not simple. The reading is thus converted to centipoises. Work done by Woolgar[33] makes it possible to compare Stormer readings. Byck gives a reduction chart[34] for use with the Stormer.

The test cup is filled with mud, freshly agitated and free from coarse material, to the point where the inner vanes are completely submerged. The test cup is then placed in the water bath and the whole assembly adjusted to the proper height. The mud is agitated by the operator turning the crank and revolving the spindle. Metric weights are then added to or subtracted from the plumb line until the spindle is made to revolve at 600 r.p.m. The weight in grams used to cause the desired rate of shear is converted into centipoises on the calibration chart. Readings are recorded as centipoises by the Stormer at 600 r.p.m.

(Continued on Page 43)

Mud laboratory showing Stormer viscosimeters on right-hand corners of table in foreground. At left on table is mud balance for field use. Also included are analytical balances, pH testers, elutriation instruments. Through the doorway can be seen a filter press for use with higher pressures

(Continued from Page 38)

Operation of the Stormer instrument can be taught to a member of the drilling crew although interpretation of the results can best be made by an engineer. The comparison of the viscosity as obtained by the Marsh funnel and by the Stormer instrument can be made. The accompanying chart shows such curves for one mud but accuracy requires that the relationship be established for a large number of muds.

For more detailed studies of viscosity, shear and yield, the instrument developed by Garrison and ten Brink,[35] is well suited. It is capable of a wide variety of speeds, and a constant and continuous motion over prolonged periods. This instrument is used mostly for experimental work. However, there is a need for a rugged instrument, suitable for field use, with which reproducible results can be obtained of measurements of viscosity, shear, and yield of the mud.

Wall-Building Properties

Both the wall-building properties of the mud and the water loss are obtained simultaneously in a filter press or wall-building tester. This instrument consists of a screw-press frame and a 3 by 7-in. cylinder; the cylinder has a filter arrangement in the bottom and a hose connection on the top. The cylinder is filled with mud, the lid is held to the top by the screw and then pressure is applied through the hose connection either from a gas-filled pressure cylinder or pump. Pressure used is 100 lb. per sq. in. plus or minus 5 lb.

The individual parts of the filtering element are wet with water just prior to the test and shaken to eliminate any excess. The element is then placed in the cylinder and about 600 cc. of mud poured into the cylinder. The temperature of the mud is taken just prior to the test and for standard comparisons should be within 5° of 100° F. The lid is then fitted in place and the pressure applied, the filtrate from the press being caught in a graduated cylinder below.

The volume of filtrate accumulating in the receiving graduated cylinder in 30 min. is recorded as the filter loss expressed in cubic centimeters. When the 30 min. period is up, the pressure is released from the press cylinder, the cylinder emptied of excess mud and the filtering element removed from the cylinder. The filter cake is then washed free of any mud and is measured. The thickness of the filter cake is expressed in 1/32 in.

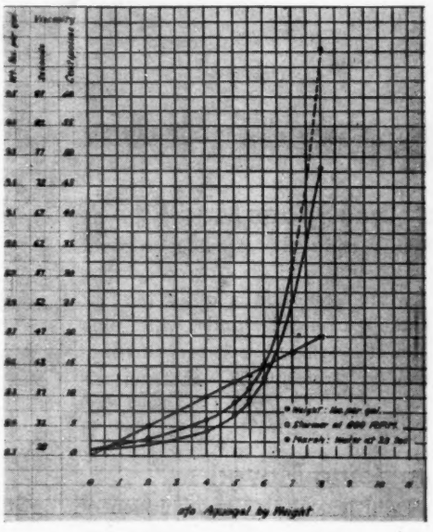
Some operators wish to gather more complete data and record the filtrate at the end of 1, 5, 10 and 30 minutes. This enables them to determine whether the mud forms an effective seal or whether some water loss may be expected to continue through the filter cake.

The filter press is simply constructed and easy to operate and for the amount of information it gives, it is a very good investment for the drilling contractors. As the filter cake is dependent on the quality of the mud and not on the conditions in the formation[36], the drilling crew can tell what to expect from a mud tested in the above manner. However, a factor which must be considered is the temperature in the well as this has a direct bearing on the plastering qualities of the mud.[37] A series of tests and extrapolation of the curves obtained may be used to predict the plastering qualities of a mud at elevated temperatures.

Several instruments have been designed for laboratory and experimental work but they are mostly variations of the above. Byck describes an instrument in which it is possible to test either actual or synthetic cores at elevated temperatures and pressures. Evans and Reid[32] report using plaster of paris strips which were dipped in the mud and the accumulated sheath measured.

The gel strength is a measure of the minimum shearing stress necessary to produce slip-wise movement. On the drilling rig, gel strength is measured with the Marsh funnel viscosimeter, the procedure being very simple. The viscosity reading is taken in the regular manner with freshly agitated mud and the funnel refilled with mud which is allowed to set 10 minutes after which the viscosity reading is again taken. The difference between the second and first viscosity readings is the gel strength of the mud. The results are empirical but do present a gage for comparing the changing conditions of the mud and the method has the advantage of being simple.

Viscosimeters can be used for determining gel strength and several other instruments have been



Relationship of Marsh funnel and Stormer viscosity for one mud. Relationship between the two methods varies with different muds

presented to the mud engineer. The most widely used method in the laboratory is that employing the Stormer viscosimeter, the mud in the cup being agitated for a period and then weights being added to the plumb line until a movement of approximately ¼ revolution of the spindle is effected after the brake has been slowly released. The total weight in grams required to obtain this rotation is reported as the initial gel strength.

A second gel-strength reading is taken after allowing the mud to remain quiescent for the desired period by adding weights to the line in small increments and releasing the brake. This process is repeated until the exact weight required to cause rotation is found and the weight is then recorded with the time of quiescence as the second gel-strength reading.

This procedure takes an experienced operator and requires several trials to obtain the initial gel strength, with the gel strength after an elapsed time requiring even more trials.

The instrument used by Garrison and ten Brink can also be used to determine the gel strength and will give even more information than the Stormer.

A recently introduced instrument, the Shearometer, uses a thin duralumin tube of specified dimensions and weight which is carefully placed in the mud and removed. The shear strength is read by placing the tube alongside a graduated scale. Shear strength is reported in pounds per 100 sq. in.

A sedimentation tube is used for the determination of sand content in conjunction with one of four methods of separating the sand from the drilling mud. These four methods are elutriation, centrifuging, settling and sieve analysis with the first and last of these being the most popular.

In the elutriation method the mud is passed in the sedimentation tube and diluted and then a jet of clear water run into the sample. In a 250-cc. sedimentation tube the rate of flow required to transport sand is 470 cc. per minute; in a 100-cc. tube the required velocity is 286 cc. per minute. After the turbidity of the sample disappears the solids are allowed to settle to the bottom. When a 75-cc. sample of mud is used in a 250-cc. tube, the percentage of solids by volume is read direct.

For the centrifuge method, the common machine found in the oil field is used. The tube used for this purpose is an A.S.T.M. D96-35. The mud is diluted with 4 volumes of water and centrifuged at 1,500 r.p.m. for 3 to 5 minutes. The operator must decide where the line of demarcation between silt and sand is located. The reading at this point is multiplied by 5 to obtain the percentage of solids.

Screen analysis is made with a funnel and screen set. The measured sample is diluted and then poured through a 200-mesh screen on top of the funnel. After all the mud has been screened, the sand is washed free of the mud and then washed into a sedimentation tube.

The dilution and settling method uses a sedimentation tube into which the sample is placed, diluted and then shaken violently. The tube is then allowed to set a specified number of seconds (depending on the size of the tube used) and the reading taken. Generally the mud sample has been diluted with four parts water so the reading must be multiplied by 5 to obtain the percentage of solids.

Other Measurements

The tests for the remaining qualities of the mud are made less frequently and come more in the province of the mud engineer than in that of the drilling crew. They will, therefore, be described only briefly here, but complete information can easily be obtained from the literature.[37 38 39].

The hydrogen ion determination may be made with gelatin strips impregnated with indicators, the Wulff pH tester or the Beckman pH meter. The first is a procedure adaptable to use on the drilling rig, the second may be used in the field, but preferably in the laboratory and the third is a laboratory instrument.

Salt content of the mud is obtained by titrating a sample of the mud with a silver nitrate solution. For close determinations good laboratory technique is required, the silver nitrate solution should be kept in the proper condition and extremes of temperature should be avoided. The presence of phosphates in the drilling mud (quite common when chemical treatment is used) will cause a precipitate the same as will salt. Another method used for determining the presence of salt is the periodic or continuous testing of the conductivity of the mud.

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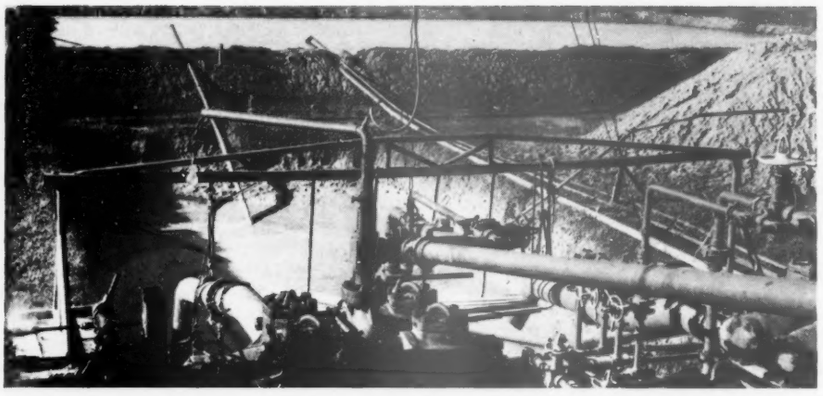
Operating Ideas

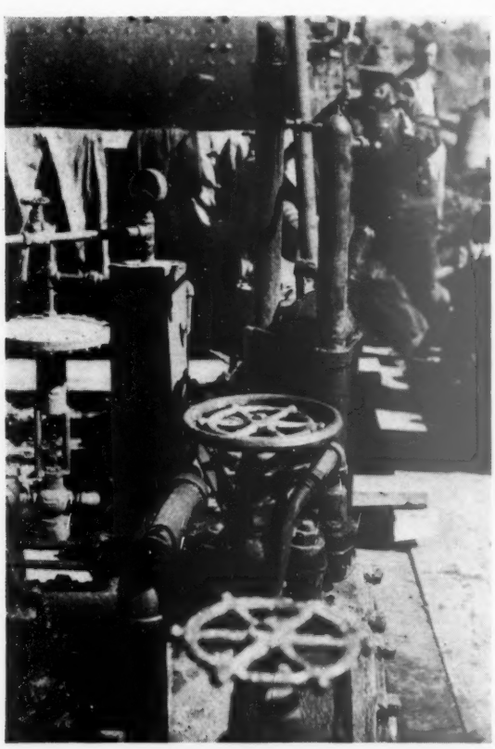


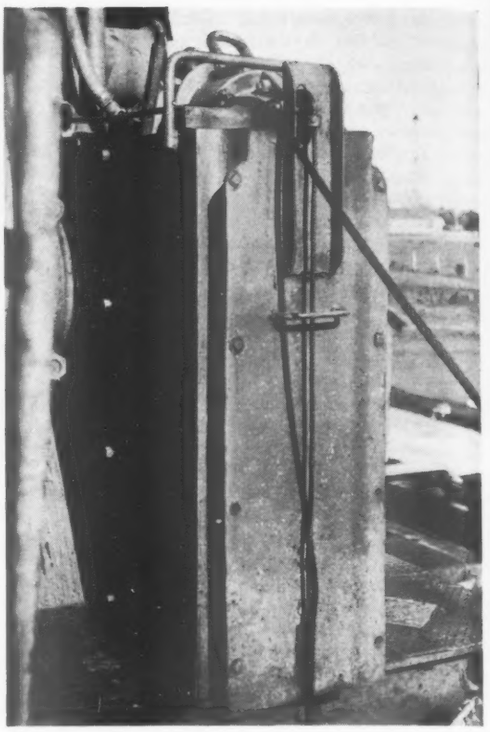
Truss Member For Holding Suction Lines Spans Mud Pit

By building a truss from pipe sections, one drilling contractor provides a rigid bridge across the mud pit for anchoring the suction lifts, and also for carrying a swinging scaffold or stage upon which to stand while regulating height of the foot valves. The ends of the truss are carried in sockets of rigid stands, with pins through matched holes to prevent overturning. Short lengths of rope serve to support the outer ends of the planks forming the working platform. The suctions are raised by chain falls, suspended from the truss.

Guard Protects Steam Throttle From Being Moved

A heavy iron ring, mounted level with the wheel which controls the admission of steam to a feed-water pump, permits the throttle to be turned within the ring, but effectually prevents it from being accidentally shifted by contact as the fireman works around his equipment. Such a guard permits the feed-water pump to deliver a predetermined flow of water to the boilers over long periods without misadventure. The throttle for the emergency pump, although likewise exposed to accidental shifting of its setting, is left clear to permit quick selection of the desired valve control, and likewise because it is not situated in midst of other equipment.



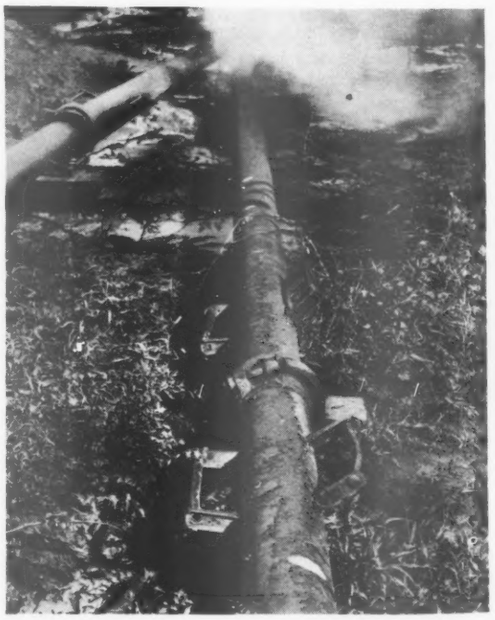


Counterweight Insures Jerk-Line Return

Supplanting the customary spring for return of the jerk line operating the backup tongs with a short wire line and a counterweight below the derrick floor, only the bare line remains to be watched while working around the rotary. The counterweight line is attached to the jerk line with a clamp and may be removed or adjusted without interfering with normal operation. A channel-iron guide around the pulley protects it from possible damage by a snapping catline.

Grips Assist in Handling Exhaust Steam Pipe

The heavy pipe used for carrying exhaust steam away from the derrick is too large to be easily gripped when carrying or setting up. One company solves this difficulty by unitizing its exhaust leads with unions at each section and with wide handles welded to the ends of the pipe near the connections. By means of these handles two men can easily carry each end of the pipe without danger, and can align it the more readily for tightening the unions. The handles are nested one above the other when the lengths of exhaust pipe are stacked on the truck for transfer to a new location.



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BRIEF SPECIFICATIONS

TYPE	E-100	E-120	E-160
Rated polished rod load	10000	12000	16000
Rated stroke	40"	48"	56"
Maximum ratio, polished rod to pull rod stroke	1.54to1	1.54to1	1.54to1
Minimum ratio, polished rod to pull rod stroke	1.00to1	1.00to1	1.00to1
Over-all length of beam	10' 0"	12' 0"	14' 0"
Depth of beam	8"	10"	12"
Center of well to center of saddle bearing	5' 0"	6' 0"	7' 0"
Top of foundation to center of saddle bearing	5' 7"	6' 9"	7' 11"
Top of foundation to bottom of polish rod support at bottom of stroke	20"	21½"	28"
Front end of jack frame to center of well	2' 6"	3' 0"	3' 5½"
Length at base	7' 7"	8' 11½"	10' 6⅛"
Width at base over front legs	4' 0⅛"	4' 2⅛"	5' 3"
Type beam hanger	True arc	True arc	True arc
Type anti-friction saddle bearings	Needle	Needle	Needle
Type anti-friction pull bar shaft bearings	Needle	Needle	Needle
Foundation bolts number and size	8-⅞x18	8-1x24	8-1⅛x24
Weight less foundation bolts	1210	1630	2390

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SAFETY - Guard on Power End of Mud Pump

REDUCTION of the accident rate in the drilling department during the past 6 years (the number of workmen to each disabling injury jumped from 7 to 11) has been accomplished in spite of the constant enlargement of equipment and increasing of the pressures handled. Part of the improved conditions are due to better design and construction of equipment on the part of the manufacture and part due to installation of proper guards where they are needed.

Steam pressures have increased in the last 10 years from 250 lb. per sq. in. to 500 lb. The latter is not commonly used but 350 to 400-lb. steam pressure is not uncommon. A failure, which at low pressure would be merely an inconvenience, might turn into a tragedy when the higher pressures are used. In addition, the higher pressures are used with larger pieces of equipment and the amount of steel which can be flung about is greatly increased.

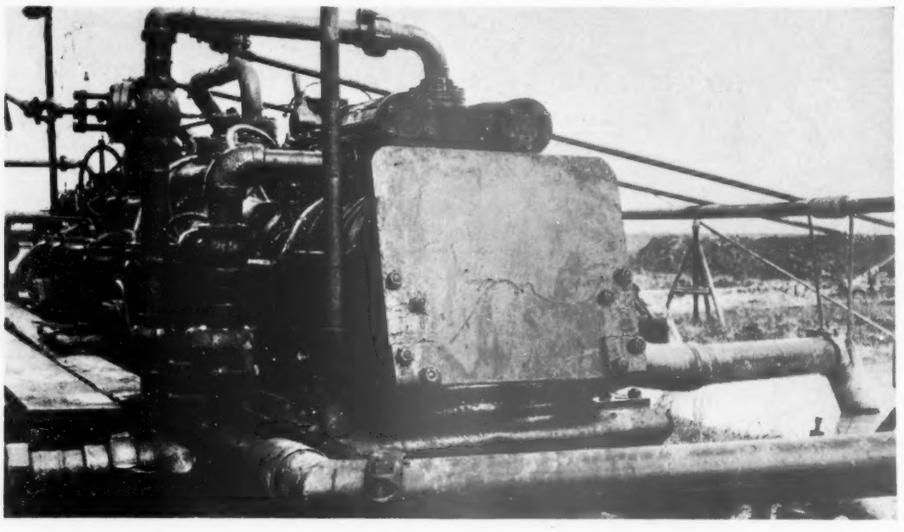
The modern 20-in. slush pump is a far cry from the old "mud hog" with its 12-in. stroke. The latter was always having something wrong with it and sudden disintegration was expected. Many contractors placed a 1240 chain and turnbuckle around the steam and fluid ends to hold them together. This is no longer necessary on the larger pumps but they are still subject to failure.

Causes of Rupture

Principal cause of rupture is the overtravel of the steam piston which will knock the head off the steam end. This is generally caused by a stick getting under one of the suction valves. Removal of most of the pressure opposing the steam results in the piston being driven against the ends of the cylinder. If the pump is shut down quickly enough, no damage will result.

Another cause of danger is the result of an attempted improvement in piston rods. Hardening of the rods to aid in the resistance to corrosion has caused them to be more subject to embrittlement; the rod may eventually break. When a rod breaks, the steam head is almost certain to be knocked completely off the pump as there is no opposition to the steam pressure behind the piston and it resembles a projectile being hurled from a cannon. In many cases the heads may be knocked 50 ft. while the nuts, which are supposed to hold the head in place, will be scattered around the landscape for over 100 ft. If a workman should be struck by either the head or the nuts, serious injury would result.

One contractor has designed a shield to localize the danger from such unfortunate occurrences. It consists of a 1-in. steel plate bolted to the pump skids and covering the steam heads on the pump. In case the head does fly off, it will be partially stopped by the steel plate and the nuts and bolts will be kept from flying about. The shield can be easily removed in case it becomes necessary to work on the steam end of the pump.



New Explosive Being Tried For Oil-Well Shooting

During the past several years considerable work has been done on developing a new oil-well explosive which would be more efficient and safer than liquid or solid nitroglycerin. A new explosive, which has resulted from this investigation, was tried out last week on a well in the Texas Panhandle. The explosive was delivered to the well in containers which were placed in the regular shooting shell for lowering into the well. Cans of the explosive can be bounced around and treated roughly without danger of detonation. The new explosive is also reported to have a more desirable effect in oil wells than present-day explosives.

The well on which the test was made is still cleaning out and it will be some time before all the results of the test can be evaluated. Experimentation and testing of the explosive is being continued.

●

Crude Oil From Logan Field Analyzed by Bureau

THE crude oil from a discovery well (Logan pool) in Phillips County, Kansas, has an intermediate base, according to an analysis recently made by the Bureau of Mines at its Petroleum Experiment Station, Bartlesville, Okla. The gravity of the sample is 31.7° A.P.I. and the sulfur content (0.57 per cent) is relatively high. The analysis made by the Bureau of Mines Hempel method shows a total gasoline and naphtha content of 24 per cent, with approximately 9 per cent of kerosene distillate, 15 per cent of gas-oil, 18 per cent of lubricating distillate, and 34 per cent of residuum.

The discovery well, Ray No. 1 of the Cities Service Oil Co., is in Section 32, Township 5s, Range 20w, approximately 30 miles south of the Kansas-Nebraska state line. This well is now the northwest outpost of production on the Barton arch, a geological uplift on which there are a number of oil-producing areas in west-central and northwestern Kansas. The producing formation has been tentatively identified as Reagan sandstone and the well was completed by setting casing on bottom and gun-perforating the casing at a depth of 3,543 to 3,563 ft.

The potential of the well obtained by the echometer indicated an output of 2,135 bbl. daily.

The analysis of the oil is shown in the detailed table presented below:

GENERAL CHARACTERISTICS

Specific gravity, 0.867 — A.P.I. gravity, 31.7°
Sulfur, per cent, 0.57 — Color, brownish-black
Saybolt Universal viscosity at 77°F., 100 sec. at 100° F., 72 sec.

DISTILLATION, BUREAU OF MINES HEMPEL METHOD

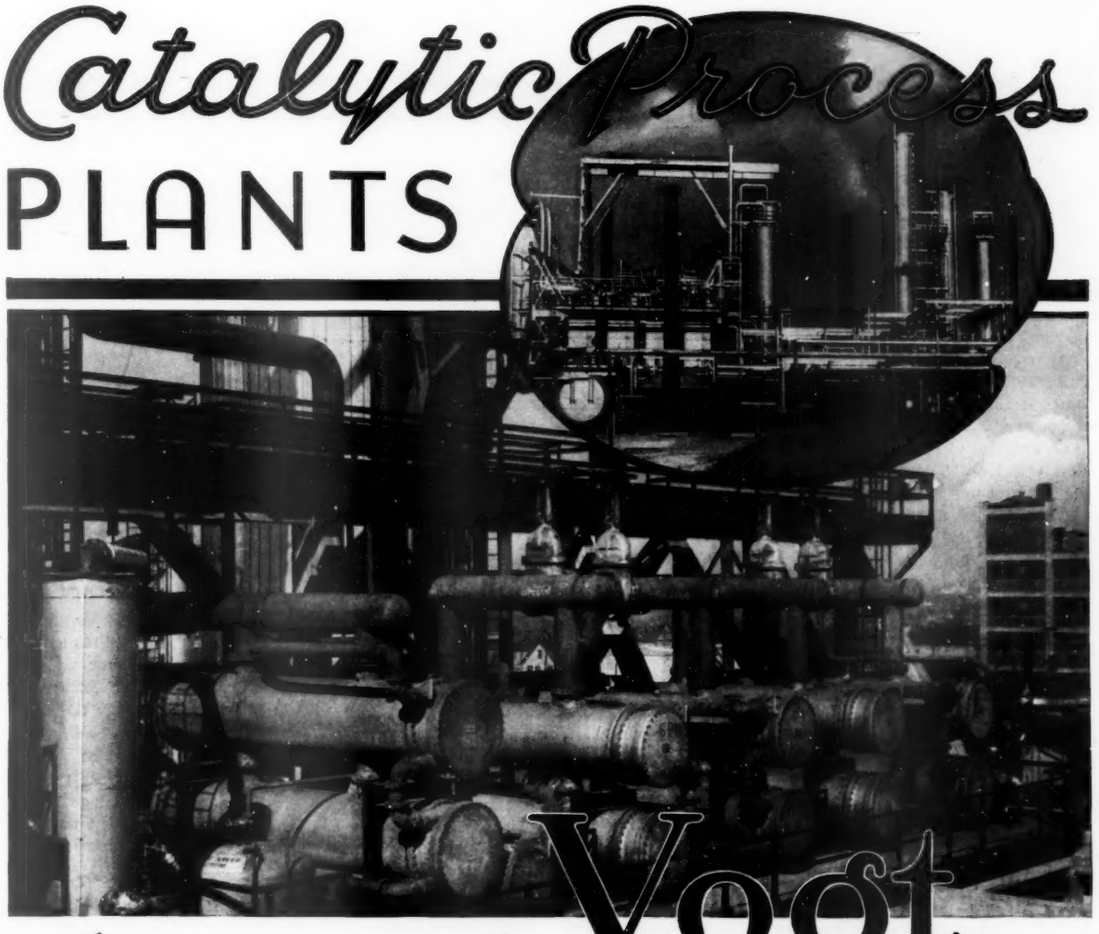
Frac. No.	Distillation at atmospheric pressure, 746 mm. Cut °C.	at °F.	Per cent	Sum per cent	Sp. gr. 60/60 °F.	First drop 35° C. (95° F.) °A.P.I. 60° F.	C. I.	S. U. visc. 100° F.	Cloud test °F.
1	50	122	1.2	1.2	0.648	86.9		...	...
2	75	167	3.9	5.1	.674	78.4	9.4	...	...
3	100	212	2.2	7.3	.714	66.7	18	...	...
4	125	257	4.7	12.0	.732	61.8	18	...	...
5	150	302	3.9	15.9	.749	57.4	18	...	...
6	175	347	4.1	20.0	.766	53.2	20	...	...
7	200	392	4.0	24.0	.784	49.0	22	...	...
8	225	437	4.1	28.1	.800	45.4	24	...	...
9	250	482	4.7	32.8	.814	42.3	25	...	...
10	275	527	6.1	38.9	.827	39.6	27	...	...
	Distillation continued at 40 mm.:								
11	200	392	4.5	43.4	0.847	35.6	32	41	10
12	225	437	5.7	49.1	.856	33.8	33	47	30
13	250	482	5.0	54.1	.870	31.1	36	60	50
14	275	527	5.2	59.3	.882	28.9	39	89	65
15	300	572	5.9	65.2	.893	27.0	41	155	80
Residuum			33.8	99.0	.974	13.8	...	...	...

Carbon residue of residuum 15.6 per cent; carbon residue of crude 5.2 per cent.

APPROXIMATE SUMMARY

Light gasoline	7.3	0.682	76.0	.....
Total gasoline and naphtha	24.0	0.734	61.3	.....
Kerosene distillate	8.8	.807	43.8	.....
Gas oil	14.7	.841	36.8	.....
Nonviscous lubricating distillate	10.2	.859-.833	33.2-28.8	50-100
Medium lubricating distillate	7.5	.883-.899	28.8-25.9	100-200
Viscous lubricating distillate				Above 200
Residuum	33.8	.974	13.8	.....
Distillation loss	1.0			

Catalytic Process PLANTS



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Slight Changes Raise Efficiency Of Central-Power Rod Lines

THE efficiency of rod lines, an important factor in pumping, can often be increased by slight changes in the supports of the rod line from the geared power to the jack. The extent of the horsepower reduction can be obtained by use of instruments for measuring load requirements.

In recent experiments conducted on an East Texas property of the Tide Water Associated Oil Co. it was found that comparatively simple revisions in the rod line resulted in substantial economies. The purpose of the tests was to determine the horsepower lost in transmission through the rod line and the effect of the installation of rollers on this loss. Three tests were run, the first being without any rollers under the rod line and the second and third being with rollers with varying amounts of sag in the line.

For obtaining the power loss in the rod lines in each case, a dynograph was used and readings taken with this instrument at the central geared power and at the jack. The difference between the loads at the jack and the power represent the loss in transmission.

Length of the rod line between the central geared power and the well was 1,725 ft. and it includes one hold-down and one swing. No changes were made preparatory to taking the tests except the doll heads on the line were greased thoroughly the day before.

The first test was taken with the well pumping under normal conditions with the rod line supported by the doll heads. The values for this and subsequent tests are given in Table 1. It can be seen that 3.75 hp. were lost in transmission with the mean effective load at the power being 5,148 lb. and at the jack being 2,099 lb.; peak load at the power was 11,844 lb. and at the jack 8,255 lb.

TABLE 1—RESULTS OF DYNAMOMETER TESTS ON ROD LINE

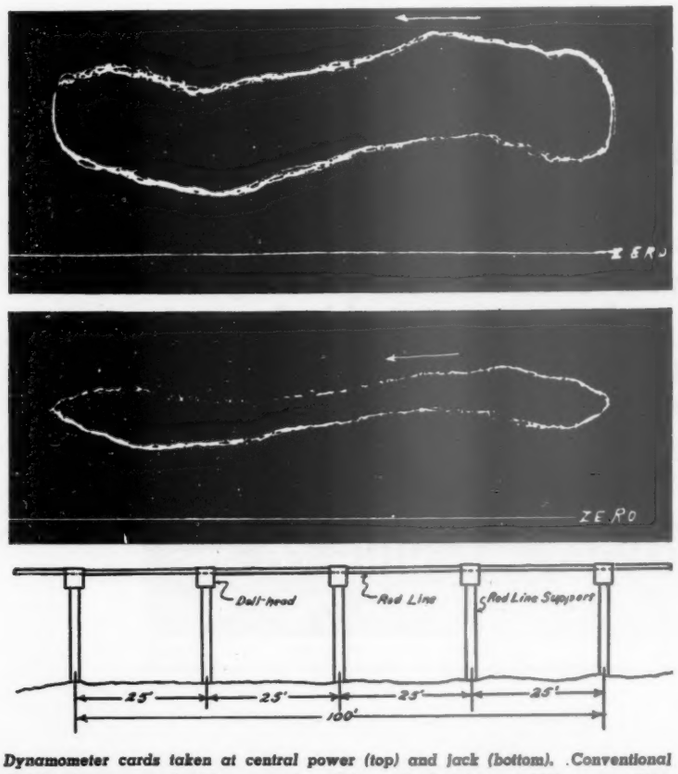
	Test No. 1		Test No. 2		Test No. 3	
	At power	At jack	At power	At jack	At power	At jack
Area of card (sq. in.)	3.56	1.45	1.95	1.48	2.33	1.33
Length of card (in.)	4.55	4.55	4.62	4.50	4.63	4.61
M.E.L. (lb.)	5,148	2,099	2,777	2,165	3,310	1,902
Maximum load, (lb.)	11,844	8,225	10,199	8,883	10,528	8,883
Minimum load (lb.)	3,158	3,685	3,948	3,948	3,356	4,606
Stress range lb.)	8,686	4,540	6,251	4,935	7,172	4,277
Polished-rod hp.	6.28	2.53	3.39	2.61	4.04	2.23
Hp. loss in rod line		3.75		0.78		1.81
Frictional load (lb.) per 100 ft. of rod line		240		76		168

Following the first test the doll heads on every fourth stake supporting the rod line were removed and rollers substituted; the doll head adjacent to each roller was raised 1 in. by inserting a spacer between it and the stake. Under this arrangement the sag at the middle stakes was 3 in. With this arrangement a slight bend over each roller was evident while the pickup at the middle stakes varied from 1 to 1½ in. and the pickup on the stakes adjacent to the rollers was ½ in.

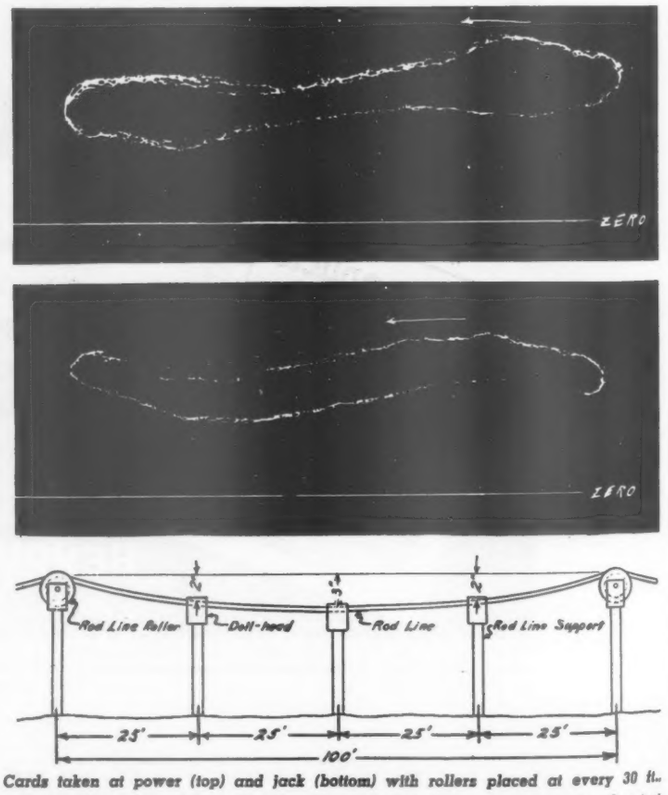
For the third test the rollers remained in the same position but the sag in the line between rollers was reduced by inserting 2-in. spacers between the doll head and the stake on the adjacent supports and 1-in. spacers on the middle stake. This gave a maximum sag of 2 in. and the rod line pickup became practically zero while bend over the rollers was also almost eliminated.

The results for the second and third tests are likewise given in the table. The horsepower loss in the rod line was 0.78 for the second test and 1.81 for the third test. The mean effective load at the power was 2,777 and 3,310 lb. respectively and at the jack it was 2,165 and 1,902 respectively. Peak load at the power was 10,199 lb. for the second test and 10,528 lb. for the third test; at the jacks the peak was the same in both cases.

It will be noted from examination of the table that the load recorded at the jack was approximately the same for all three tests while the variation at the central geared power was quite large. The most efficient method was seen to be with the greatest catenary curve, that is, in the second test where a 3-in. sag was used. Some feel



Dynamometer cards taken at central power (top) and jack (bottom). Conventional doll heads were used with no sag in rod line. Cards taken at 11½ s.p.m., 42-in. stroke (41½-in. at jack) with 1-in. pull rod at jack



Cards taken at power (top) and jack (bottom) with rollers placed at every 30 ft. and a maximum sag of 3 in. Length and speed of stroke were same as in other test

that this is too large a curve and results in more bending than is desirable across the rollers, however, this rod line has one roller in it which puts a much greater bend in the rod line than that reached in the test and no breakage has been recorded at this point. It is believed that the most efficient rod line considering all factors will be somewhere between the second and third tests.

For the obtaining of immediate results, the dynamometer cards were interpreted in the field. For calculating results, the formula was:

$$\text{Polished-rod hp.} = \frac{M.E.L. \times S \times S.P.M.}{12 \times 33{,}000}$$

$M.E.L.$ = mean effective load
S = stroke in inches
$S.P.M.$ = strokes per minute

$$M.E.L. = \frac{\text{Area of card}}{\text{Length of card}} \times \text{Deflection factor}$$

Deflection factor = 6,580 lb. per sq. in.

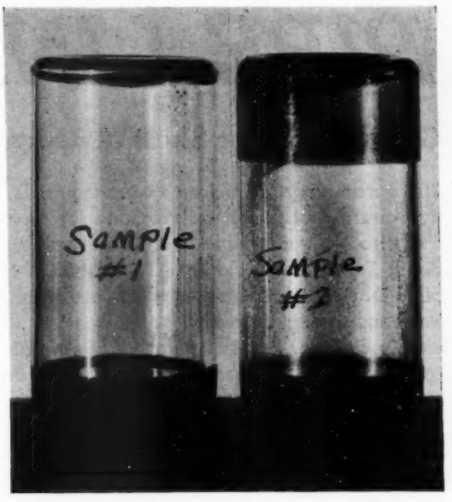
Use of Activated Glycerides For Stablizing Gasoline

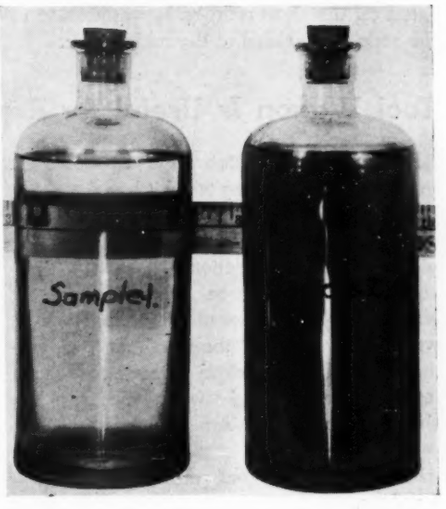
By F. W. McCURRY
Derby Oil Co.*

THE use of glycerides in stabilizing metallo-organic compounds such as tetraethyl lead and the metallo-carbonyls, when used in motor fuel, has been discussed and I should like to present in more detail the properties and uses for "Vitoid," an activated glyceride. It is able to hold metallo-organic compounds in solution in gasoline. Both haze in the gasoline, caused by sunlight, and precipitation of solids after blending and storing may be entirely eliminated. Colorless gasoline also may be treated to retain its transparent sparkle.

The activated glyceride (Vitoid) has been commercially used by several refiners with excellent results. The amount necessary to stabilize the motor fuel depends on the latter's quality. This, in turn, is governed by the type and quantity of sulfur compounds present. Some fuels are stabilized with as little as one part to 200,000 parts of gasoline, while others require one to 40,000 parts. The following tables and pictures are presented to illustrate its effectiveness.

In addition to the stabilizing effect of gasoline and organic metallo-compounds it has been shown that the hazards of cleaning tanks may also be greatly decreased by preventing precipitation of metallic compounds. Another apparent need at this time is with the jobber trade where tanks are seasonally changed from one commodity to another, such as converting an ethyl-treated gasoline tank into a burning-oil storage. This tank often has scale and a precipitate in it which may be eliminated by use of Vitoid.





Right, above: Sample 1 shows tetraethyl fluid treated with activated glyceride and placed in the dark for 6 months. The sample was removed for inspections at frequent periods. Note small amount of crystalline precipitate adhering to side of bottle. Sample 2 is same as Sample 1 except that No. 2 was not treated with activated glyceride. Note heavy crystalline deposit

Right: Sample 1 shows an Ethyl gasoline after 24 hours exposure to sunlight, containing 3 cc. of tetraethyl lead and treated with activated glyceride. Sample 2 is same as Sample 1 but without activated glycerides

*Part of discussion of lubricants presented at 1940 annual meeting of American Petroleum Institute.

TABLE 1—STABILIZING PETROLEUM DISTILLATES AND MOTOR FUELS BY USE OF AN ACTIVATED GLYCERIDE

Sample—	Hours exposed to the sun						
	¼ hour	½ hour	1 hour	2 hours	4 hours	8 hours	24 hours
Original	Clear	Sl. cloudy	Cloudy	Milky	Hvy. precipitate	.....	.....
Motor fuel and glyceride	Clear	Sl. cloudy	Cloudy	Milky	Hvy. precipitate	.....	.....
Motor fuel and 1 part/40,000 activated glyceride	Clear	Clear	Clear	Clear	Clear	Clear	Hvy. precipitate
Motor fuel and 1 part/10,000 activated glyceride	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Motor fuel cracked distillate	Clear	Clear	Clear	Sl. cloudy	Sl. cloudy	Hvy. precipitate	.....
Motor fuel cracked and 1 part/10,000 activated glyceride	Clear	Clear	Clear	Clear	Clear	Clear	.....
Motor fuel and tetraethyl lead	Clear	Sl. cloudy	Sl. cloudy	Milky	Hvy. precipitate	.....	.....
Motor fuel and tetraethyl and 1 part/10,000 activated glyceride	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Motor fuel cracked and gum inhibitor	Clear	Clear	Clear	Sl. cloudy	Cloudy	Hvy. precipitate	.....
Motor fuel cracked and 1 part/10,000 activated glyceride—							
And monobenzyl	Clear	Clear	Clear	Clear	Clear	Clear	Clear
And paraaminophenol	Clear	Clear	Clear	Clear	Clear	Clear	Clear
And butylparaaminophenol	Clear	Clear	Clear	Clear	Clear	Clear	Clear
And pyrogallol	Clear	Clear	Clear	Clear	Clear	Clear	Clear
And alpha naphthol	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Motor fuel and iron carbonyl	Clear	Cloudy	Milky	Dense	Hvy. precipitate	.....	.....
Motor fuel and iron carbonyl and activated glyceride	Clear	Clear	Clear	Clear	Clear	Clear	Clear

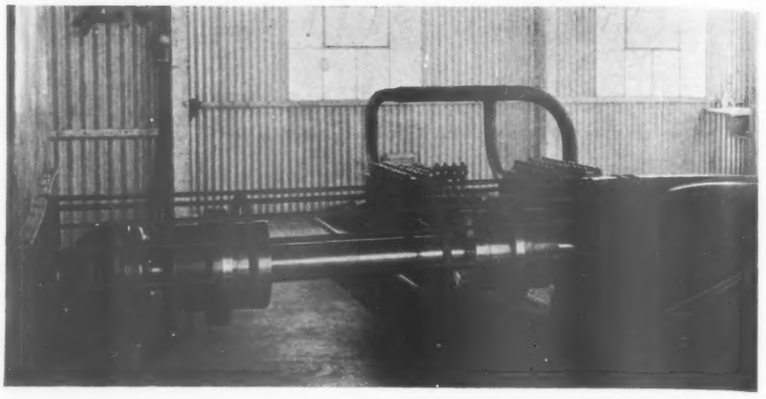
TABLE 2—PRESERVING AND STABILIZING ANTIKNOCK VALUE OF MOTOR FUELS BY USE OF AN ACTIVATED GLYCERIDE

Sample—	Hours exposed to sunlight				Octane number	Loss of lead (%)
	2 hours	4 hours	8 hours	16 hours		
Original motor fuel with 3 cc. tetraethyl lead	Not exposed	.....	.....	Clear	78.1	....
	Not exposed	.....	.....	Clear	78.2	....
Motor fuel and 3 cc. tetraethyl lead	Cloudy	Dense	Hvy. precipitate	.....	77.4	13
					77.6	12.9
Motor fuel and 3 cc. lead and activated glyceride	Cloudy	Dense	Hvy. precipitate	.....	77.5	12.7
					77.4	13.2
Motor fuel plus 3 cc. lead and 1 part/10,000 activated glyceride	Clear	Clear	Clear	Clear	78	None
					78.2	None
Motor fuel and 1.7 cc. tetraethyl lead	Not exposed	.....	.....	.....	71.8	..
					72.0	....
Motor fuel and 1.7 cc. tetraethyl lead	Cloudy	Dense	Hvy. precipitate	.....	70.8	12
					71.0	10
Motor fuel and 1.7 cc. lead and activated glyceride 1 part/10,000	Clear	Clear	Clear	Clear	71.8	None
					71.9	None
Motor fuel and iron carbonyl	Not exposed	.....	.....	Clear	....	....
Motor fuel and iron carbonyl	Cloudy	Hvy. precipitate	.....	.....	....	....
Motor fuel and iron carbonyl and activated glyceride 1 part/10,000	Clear	Clear	Clear	Clear	....	....

PIPE-LINE SUGGESTIONS

Guard for Drive Shaft of Reciprocating Pump

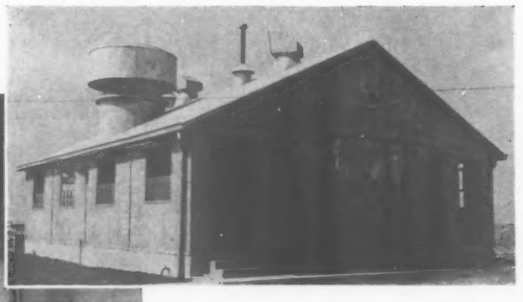
The accompanying picture shows a simple, yet effective guard that has been provided for an open drive shaft from a gas engine to a reciprocating pump in a South Texas pump station. The guard is constructed of ⅜-in. steel rods, ends of which are welded to ⅜-in. steel supporting bars that are shaped to fit and rest snugly over the upper halves of the circular flanged coverings of the bearing boxes at the engine and pump ends. The rods are spaced close enough to provide protection for anyone working around the revolving shaft, yet wide enough to provide easy access to lubrication openings to the bearing boxes without removing the guard. However, if necessary, the guard can be lifted off the shaft readily. In addition to the end bars, the rods are welded to the middle bar.



Tool Wagon Is Useful for Repair Work

At a compressor station on a natural-gas line, a rolling tool kit has been made which is wheeled about like a tea wagon. This is of welded construction; it is equipped with three shelves which are large enough to hold wrenches and other tools so that they may be removed conveniently. The space between the shelves is sufficient for easy accessibility. Wheels are covered with rubber to prevent scratching the floor.

Air-Cooling System For Gas Engines



An effective air-cooling system for gas engines has been installed in a pump station which has been built for a recently completed gasoline line in South Texas. Two gas engines are used in the station. Each of the two radiators of the engines is enclosed in an air duct constructed of galvanized sheet metal. These two air ducts join overhead in a common, large cylindrical duct extending out of the roof of the pump-station housing. In the top is a large motor-driven fan that pulls in cool air and forces it through the engine radiators. The pictures show (1) outside view of station and (2) interior of the station shows how the ducts enclose the engine radiators.

Storing Rotating Elements of Centrifugal Pumps

For taking care of the problem of storing spare rotating elements of centrifugal pumps, a gasoline pipe-line company has adopted a practice of suspending them from a roof beam so that they may be held in a plumb position. This avoids trouble which is sometimes experienced when they are stored in a horizontal position. The elements are protected by a covering of paper. Furthermore, by this method they can be stored in a corner where they are readily accessible.

Practical Application of Geology in Illinois Rotary Drilling

By L. A. MYLIUS
Geologist, Bell Brothers, Robinson, Ill.*

FOR many years Illinois was cable-tool country. On that account some comments on both cable and rotary methods of drilling are included in this article.

Most of the material used in this article was obtained from derrick-floor experience with small independent companies or individuals. Large-company drilling may eliminate many of the points mentioned herein. On an individual's derrick, close deals and other conditions sometimes make $25 or $50 worth of mud or other things a "luxury." It is felt that as a large proportion of Illinois drilling is by small companies and individuals, the layman and others may find something of value in these notes.

Illinois Sands

It should be noted that the Illinois rock section above the Devonian so far has produced from about four Pennsylvanian zones, seven Chester formations, and five lower Mississippian formations, a total of 16. These vary in thickness up to 100 to 200 ft., and somewhere in the Illinois area parts of each are productive. In an area of about a township, the Grayville-Griffin country (Wabash County) has production, varying from place to place, in at least 10 of the above 16 formations. As many as five have carried oil in a single well. Their depths near Grayville-Griffin range from about 1,200 to about 3,200 ft.

Illinois pays, whether in sands or in limes, are irregularly lenticular in habit. Each hole is different, with widely varying degrees of abruptness, even in the same pool or on the same lease. The rock pressures in these pays are usually less than normal.

Many of these lenticular pays have yielded oil without water, but many lenses or parts of lenses have been found which have considerable oil saturation yet are productive of only water or principally water. Also many other stages have been found that show less oil saturation down to an all-water content of the "sand."

In borderline cases (perhaps known as such only in hindsight) the eye cannot differentiate between a nonwater condition and a water-producing condition, with any sound confidence. The nose can do a better job than the eye. Core analysis and electric logging may be useful aids when correlated with results of cut-and-try methods previously used on the same pay and locality.

In this situation the geologist should find an increasing opportunity to help avoid passing up pays and to obtain usable "measuring sticks" of sands as they are encountered in drilling. There are opportunities to reduce costs with practical safety. Geologists can primarily watch holes for oil, not structure. Naming the beds and determining the lay of the beds has, of course, some material importance. However, the usual object of a drilling test is to establish usable decision-aiding measuring sticks, for the one or more sands that a hole may penetrate, and to have the hole in shape to obtain the maximum benefit for the money spent, with a minimum of guesswork.

The tendency to drill only for predetermined pays is persistent, but in this "land of lenses" the lesson of drilling the hole for oil is gradually being learned.

Cable Tool and Rotary Drilling

Conditions make use of the rotary drill either advantageous or imperative in the greater part of the Illinois play. Rotary drilling offers no serious disadvantage that cannot be overcome.

Cable tools have the inherent advantage of simplicity and directness, in determining and correcting fluid conditions as the hole is drilled or completed. However, in a cavy fluid-carrying rock section they lack adaptability, and below medium depths they are not "good business" for hole making.

The advantage of cable-tool cuttings is often overstressed. Rotary cuttings with a timed drilling operation are usually of more practical value than cuttings from cable tools. Details concerning the producing formations for use in completion and in the producing life of the well is more readily obtained by the rotary with cores, timing, samples, and the supplementary aids available. In pools where water conditions are known complete drilling of the pay by rotary is sometimes preferable to the alternative deepening, later, by cable tools.

Both methods have a place and some parts of Illinois will always be cable-tool country.

Rotary drilling is anything but foolproof. However, the routine alertness that is essential helps expedite the finding of needed safeguards whereas the inherent foolproof advantage of cable tools permits more carelessness with companion evils.

The problems concerning straight hole and accurate measurements are easily handled and are not discussed here.

Rotary mud is of primary importance. Proper mud permits safe drilling, a properly conditioned hole, and with those there is also possible good samples, good coring, good electric logging, good drill-stem testing, good pipe running, etc. Improper mud can alone cause part or all of the above desirable conditions to go wrong. In general, a mud above 35 points viscosity but around 10 lb. per gal. weight is an approximate safe minimum. An approximate very good all-purpose mud is 38 points viscosity and 9½ lb. per gal. weight.

Time Log of Rotary Drilling

The accompanying illustration shows 400 ft. of drilling time plotted on an electric log. The lime of a sample log is also plotted. The printed names of beds and comments are interpretations by the operator of the electric-log machine. Cores were taken after 1 to 2-ft. drilloffs. That relative time does not show.

Not all fast drilling indicates porosity, but all porosity is fast drilling. That is not 100 per cent true but very close to it. That does not mean that the productive ability of the formation is directly proportionate to the ease with which it drills, but it means that pays occur in beds that drill relatively faster than nonproducing beds. In an individual pay the part that is best will usually drill the fastest, and vice versa. Drilling with even weight and rotation has brought that out.

Rotary drilling lends itself to accurate timing of the rate of drilling progress; also to recording accurate drilling weight and speed of rotation. At least one company uses meters to record these functions automatically. The future will probably see most rotary rigs, in the Illinois type of country, equipped with automatic timing and automatic sampling devices.

In the meantime various forms of time logs are now usually carried for at least part of the hole. Two years ago this was not the case. A continuous time record is of primary importance. A simple log pad with a 5-ft. timing column, a 1-ft. alternative column and room for weight and other comments, is not difficult for the crew to keep. Temporary footage marks on the drilling kelly and note-making of drilling-weight changes, appreciable rotation changes, new bits, etc., put no burden on the drilling crew.

New bits may go into the hole at different places in different holes, but the relative drilling-time variation will still be usably consistent. Drilling time is affected by many other variables

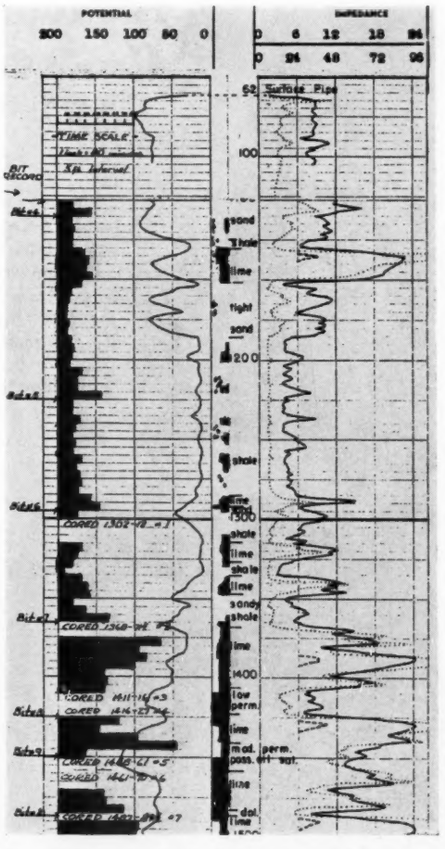


Diagram showing 400 ft. of drilling time plotted on an electric log

*Presented before the 1940 Illinois Mineral Industries Conference, Illinois Geological Survey, Urbana, Ill., November 1940.

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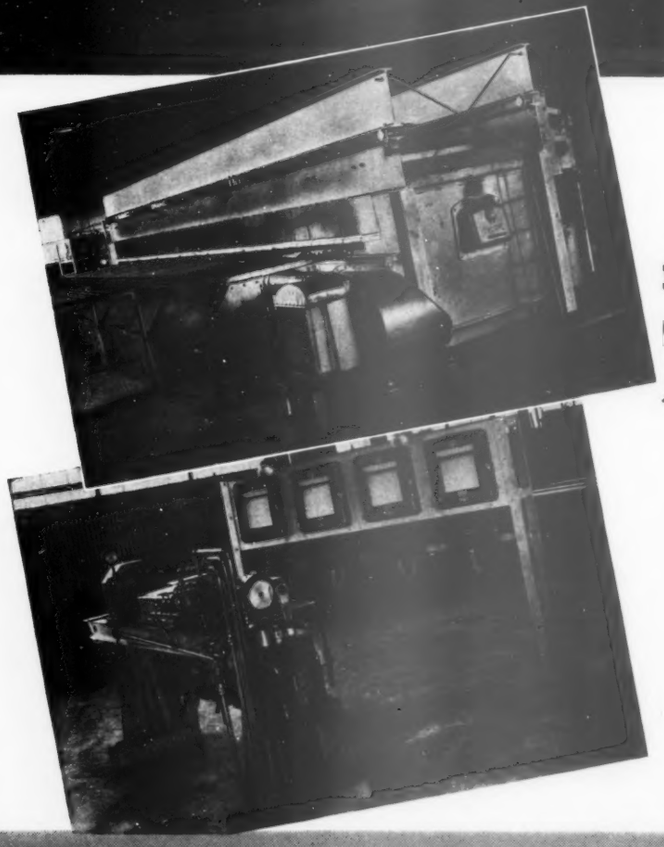

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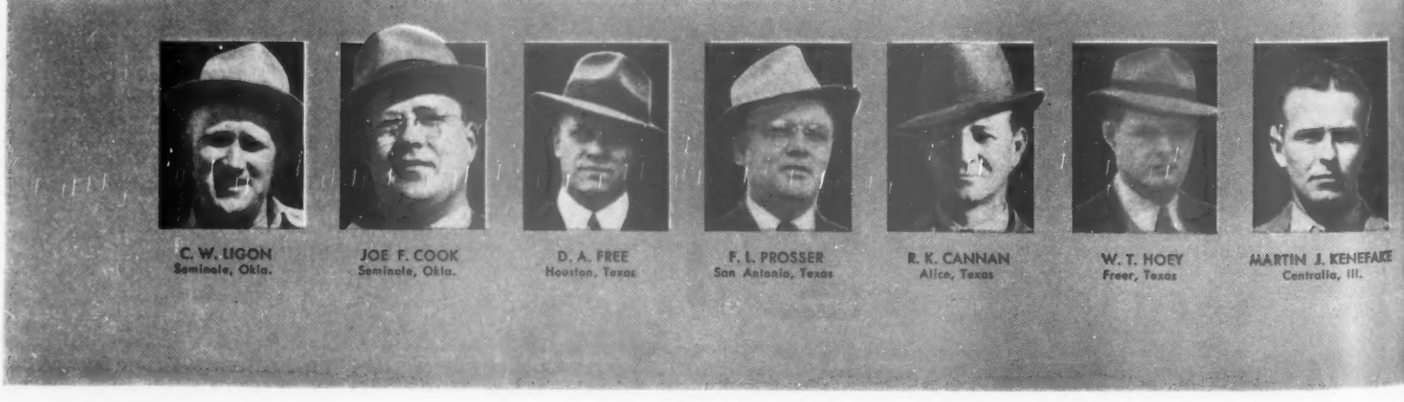

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such as size and condition of the pumps, rotation and weight carried on the drill pipe, condition of the hole and bit, etc. There are a few important exceptions for which one should be alert, like the fact that a dull polished rotary bit may "stop going" in sand which normally drills fast. Another important exception is that reaming before making new hole may wear the bit out of gage and make subsequent new hole appear slower than it should. However, the point that makes the keeping and use of this type of drilling log practical is that all these variables fail to destroy a consistent relative drilling variation in this variable Illinois rock section. In predetermined places and at breaks drilling time can be kept by the foot.

Sampling

Granted proper mud and timing, the samples taken (at least every 5 ft.) can be checked against the time log and are more intelligently interpreted with that help. Oil-carrying beds can be located accurately within 6 in. to 1 ft. by a routine operation. The time it takes for the sample returns to reach the surface varies per 100 ft. of hole depending on the depth and on many variables such as the condition of the hole and bit, size and condition of the pump, condition of the mud, size and character of the cuttings, etc. However, 2 minutes per 100 ft. is more than is needed at shallow depths and about ample for stubborn conditions at 3,000 ft. Lime cuttings at 4,000 ft. might take as much as 3 minutes per 100 ft. to give a good rotary sample. In every hole at least a few clean-out formation changes should be used to test the rate of sample returns.

Pumping Samples Off Bottom

Drillers can be instructed to watch for and catch the places where the speed of drilling progress materially increases. After the penetration of 2 or 3 ft. in a fast-drilling break the drilling should stop. The bit should be picked up about 1 ft. off bottom and a sample of the formation pumped up to be inspected before the drilling proceeds. In lime the bit should sometimes be stopped after 1 ft. of "drilling off." If the sample shows oil a decision to core or to proceed cautiously or otherwise can be made. In this way oil-carrying reservoirs can be noted and cored, core analyzed, and/or drill-stem tested before it is too late. When drilling in a known probable pay zone, any distinct change in drilling time, even slowing up, should be checked with a sample off bottom before deepening. This helps to guard against unforeseen condition of the bit.

It is assumed that ordinary common sense can avoid much unnecessary pumping off bottom. On an average hole even a very high total, say 75 pumped samples from the bottom, might cost only about as much as one average core. Pumping time costs no more than $10 per hour. Furthermore, good coring technique should place the core head on the oil-carrying rock. Coring from hard into softer formations rarely results in average or in a "decisionable" amount of recovery. The hole that pumps samples at the "breaks" and shows no oil can be drilled without coring costs and without fear of having passed up anything.

The system of pumping samples off bottom results in a relatively cheap control method which provides for other moves that may establish usable measuring sticks before it is too late.

In Illinois, with proper mud on a sampled hole, it is not possible to go through any oil-carrying formations without both smelling and seeing oil in the cuttings (in fact, regardless of heavy mud, running water into the sample box will knock down anything that is in the mud). The problem in Illinois is not only that the oil beds may be missed, unless the hole is watched properly, but in not stopping in time to core or otherwise test the oil showing in order to establish measuring sticks before deepening. . . .

Supplementary Aids

Before noting some points on supplementary aids it should be emphasized that all these aids represent a remarkable step forward. The ingenuity, persistence, and business keenness behind these methods can be realized by their rapid strides into a permanent otherwise unfilled place in rotary drilling efficiency. The comments that follow are intended to focus the alertness of geologists toward the present development of these valuable newcomers.

In their best functions these services are not competitive. However, their uses often overlap and there is often a choice, depending on the problem. Sometimes the use of some supplementary aid is imperative.

The drill-stem test.

There are simple ways that packers can be used on the drill pipe to shut off the upper part of the open hole. Illinois formations usually lend themselves to good shutoffs. No drill-stem test is sound if the rotary hole goes deeper into and leaves exposed in open hole a part of the rock section that is not needed in the test. A drill-stem test, with a time log and only rotary cuttings, may permit a sound decision on running pipe. Under similar conditions without samples an electric log and drill-stem test might permit running pipe.

In this Illinois district where rock pressures are subnormal, the rotary drills oil-carrying beds of great variety and with extremes in permeability, porosity, and other characteristics. Drilling conditions vary also. On that account the oil content shown by the drill-stem test may not be a sound indication of commercial oil measurement. Sample data, core study, or other facts may answer that question. However, the big danger in Illinois sands is that although they carry a lot of oil they may produce chiefly or only water. A drill-stem test will show water and give some relative measuring stick of water. For sound moves a drill-stem test may often be an imperative operation. In pools where the water and oil conditions are sufficiently correlated by "cut and try," other methods usually eliminate the need of a drill-stem test.

Core analysis.

Pumping samples off bottom on the "breaks" also permits a chance to stop and core any saturated strata. A hindrance in the use of core analysis is that a core must first be obtained. Failure to attempt or obtain cores will prevent the use of core analysis. Also, water determination is of prime importance so the core wagon should be at the derrick or at least within 2 hours of the derrick. Sealed containers should be used if the wagon is not at the derrick. Core analysis will note water either in sand or lime formations and should usually catch borderline or bad water conditions with less "cut and try" correlation background than an electric log. For the water hazard in lime or dolomites, as yet, core analysis is decidedly preferable to an electric log.

Core analysis, besides perhaps indicating the need of a drill-stem test, will give immediate information on the nature of the reservoir. These data can be used to determine how best to complete and handle the well.

It might be noted that per-acre recovery figures computed from core analyses may take years to correlate, and further more that "gas expansion" or similar estimates may not refer to ultimate oil production. That point might be confused, and perhaps misapplied by the layman.

Electric logs.

The electric log is the most versatile and, partially on that account, the most widely used supplementary aid to Illinois rotary drilling. There are often miscues in the best-planned rotary drilling. The electric log is a remarkable "pinch hitter" in some cases.

The principle is simple and for detecting formation changes and making measurements in true sands these self-recording machines are remarkable. If the machines are working right they do not lie, so far as is known, but what they indicate may not be fully understood. Consequently in the interpretation, especially of relative oil and water content, there is considerable danger unless the machine has been sufficiently correlated to justify the decision.

The left-hand electric curve represents chiefly the permeability of the formations. A time-drilling log is needed for practical use of this permeability curve. Otherwise reservoir tops and reservoirs may be incorrectly located and some reservoirs might be missed. This is especially true in lime and dolomitic rocks where timed samples or cores may provide the explanation of bulges in the permeability curve.

In the Louden (Fayette County) and the Salem (Marion County) pools the electric log quickly correlated itself to relative water and oil conditions in the true sand bodies. It was then soundly used to reduce coring and other field expense within rather wide limits. In general in the limes and dolomitic beds, however, interpretations of water and oil conditions sometimes reflect insufficient correlation background, or at least suggest that the variables involved are not yet understood.

In true sands, as the application of electric logging has moved over the state, it has been correlated by "cut and try." It has had a wide range of reliable usefulness. Different sands in the same hole need separate correlation and electric logs are not yet fully caught up. Past experience suggests that it will be possible, within fairly wide limits, to correlate water and oil conditions in all true sands that locally produce commercially. However, borderline cases may always need some other test. A valuable "over all" use of electric logs is the information provided showing positions, some characteristics, and structure of the formations.

BOOK REVIEW

A.S.T.M. SPECIFICATIONS FOR PIPE AND PIPING MATERIALS FOR HIGH-TEMPERATURE AND HIGH-PRESSURE SERVICES, American Society for Testing Materials, Philadelphia, Pa. Price $1.25.

This widely used compilation is a selection of 24 of the 40 A.S.T.M. specifications covering pipe and piping materials, particularly materials used in high-temperature and high-pressure services. The book provides in convenient form standards which are important to those concerned with power plants and industrial installations of piping materials. It is widely used in other connections by manufacturers and purchasers of materials.

Eleven of the twenty-four specifications cover various types of carbon and alloy-steel pipe and boiler tubes, etc., including the specifications for classification and dimensions of wrought-iron and wrought-steel pipe. Four items cover carbon and alloy-steel castings, three pertain to bolting materials including nuts, and there are four items covering forgings and welding fittings. The classification of austenite grain size in steels with two grain-size charts is also included.

Copies of this 153-page publication in heavy paperboard cover with special ring binding are available from A.S.T.M. headquarters, 260 South Broad Street, Philadelphia, Pa., at $1.25. On orders for 10 or more copies special prices are in effect.

Progress in METALS

By W. L. NELSON

Costs of Stainless Steels

THE superior corrosion resistance and the excellent physical properties of the stainless steels are widely recognized but less is known of the costs of these steels. Costs for various shapes as a function of the cost of "forging billets" are approximately as follows:

	Relative cost
Forging billets	1.0
Hot-rolled strip	1.15
Bars, drawn wire, or structural shapes	1.18
Plates	1.33
Cold-rolled strip	1.48
Sheets	1.60

The ratios are reasonably consistent for all stainless steels except the simple 4-6 per cent chromium steel, being about 1.0, 1.6, 1.1, 1.6, 2.3, and 2.1 for the above respective shapes.

A complete listing of the costs of stainless steels is given in the September issue of Chemical and Metallurgical Engineering, Pages 603-604. The tabulation which follows is a partial summary of this information. The original article gives figures which indcate the effect of different percentages of carbon and other elements on the costs. In the tabulation the first of the numbers used in naming the steel refers to the percentage of chromium, and the second refers to the percentage of nickel.

Kind of steel—	Cents/lb.
18-18 or 19-9	21
18-8 with chromium	28
17-12 with 2.5 per cent mo.	34
19-12 with 3.5 per cent mo.	42
21-11	24.5
24-13	32
25-20 or 20-25	41.5
27-4	26
27-4 with 1 per cent mo.	31
29-9	31
9-21	22
15-34	42
5 (over 0.1 per cent carbon)	7.2
5	8.1
12	16
12 with 4 per cent al	19
13 or 16	18
20	19
27	24

Welding and War

IN view of the present interest and need of knowledge concerning industrial war measures, the following abstract which does not pertain directly to the petroleum industry is nevertheless pertinent. The abstract was taken from Metals and Alloys, Page 86, July 1940.

"Review of Wartime Activities of British Welding Industry," John S. Trevor. Welding Engr., Vol. 25, May 1940, Pages 23-26. General discussion.

In contrast with the war of 1914-1918, the present conflict finds welding fully developed. Generous use is being made of it in naval shipbuilding, the construction and repair of tanks, Army truck bodies, etc., for civil defense purposes, and in the building of new armament factories and bridges of great strategic value.

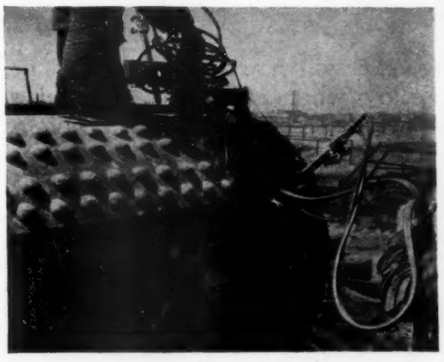
The Institute of Welding in Great Britain, prominent welding concerns, and government training centers are busy training welding supervisors and operators. A move is also being made to use women in the welding industries for light work, particularly light gas welding. Of considerable interest also is the formation of a welding company of the Royal Engineers, recruited largely from members of the Institute of Welding. This company will include approximately 8 officers and 300 men. Through their activities tanks will be repaired only a short way behind the front line and damage to armored cars, convoy lorries and artillery made good on the spot.

One of the most important applications of welding in Great Britain's war effort is in her naval shipyards. Naval architects are fully cognizant of the efficiency of welding for steel structures, and of its ability to save considerable steel and thus permit the use of a large proportion of a ship's displacement for purely military items. The naval warfare so far has provided evidence that the all-welded hull can take as much if not more punishment than the former riveted structure. Examination of the battered German pocket battleship Graf Spee in Montevideo harbor has provided unmistakable evidence that the welded joints were intact and that the ship was by no means irreparably damaged.

One of the greatest advances made in the practice of welding in British warship construction was in the building of the aircraft carrier Ark Royal at Birkenhead. This ship is 800 ft. long overall, has nine decks and is reputed to be 75 per cent arc welded. One of the most interesting uses of welding is in building of industrial air-raid shelters. Welding is also used in the construction of bombproof shelters able to keep out 600-lb. semi-armor-piercing bombs.

Scrapping Refinery Vessels

WITH the introduction of portable machine cutting, the scrapping of 80 obsolete petroleum stills became a relatively simple matter. Each still, fabricated from 1¾-in. steel plate, measured 56 in. in diameter by 32 ft. long, required six longitudinal and four circumferential cuts. After the stills were thoroughly cleansed and freed of all flammables, circumferential



cuts were made by hand, but the cutting machine was used to make the six longitudinal cuts. These were completed in but three passes, since two blowpipes, held in specially constructed brackets on opposite sides of the portable cutting machine, were used simultaneously. This setup was particularly helpful in cutting adjacent to the riveted side seams which were three plates 5¼ in. thick by 18 in. wide.

In making such cuts, the cutting machine was positioned, as shown in the photograph, so that the two guide wheels ran against the edge of a riveted seam plate. The standard angle-iron track was placed beneath the driving wheel to level up the machine. Cutting speed varied from 14 to 18 in. per minute, depending upon the coke deposits inside the shell. No. 8 nozzles with six preheating orifices were used with a cutting-oxygen pressure of 35 lb. per sq. in. (Courtesy of Linde Air Products Co.)

Record of Drill-Pipe Performance

FIGURES concerning the physical properties of strength, ductility, etc., of steels are significant to many experienced metallurgists but to the ordinary user of steel products such figures are not completely convincing. The ordinary drilling operator wants very much to hear of the actual performance of the various steel products that are available rather than to judge the products on the basis of tabulations of physical properties. The operator is aware of the extreme conditions of twisting, pulling and vibration that a drill-string must withstand. He is aware that failure of the drill pipe will involve a costly fishing job or that the pipe may become lodged in such a manner that the well may need to be abandoned. But in spite of these hard facts, the operator finds difficulty in determining the real significance of the tensile strength, elongation and charpy impact strength of the drill pipe.

A small contribution on the behavior of alloy-steel drill pipe in an actual well is related in Nickel Steel Topics of October 1940. A mixed string of carbon steel and Yoloy steel drill pipe was used in drilling a well. In all, 18 failures were experienced with the carbon-steel part of the string whereas no failures of the Yoloy drill pipe occurred. Yoloy is an alloy steel containing about 1 per cent of copper and 4 per cent of nickel. A comparison of Yoloy and ordinary Grade D pipe is given in the following table:

	Carbon steel Grade D	Yoloy
Tensile strength, lb. per sq. in.	95,000	105,000
Yield point, lb. per sq. in.	55,000	80,000
Elongation, per cent in 2 in.	18	24
Charpy impact, ft. lb. (on pipe wall)	12	25

Somewhat higher values are often given for carbon-steel Grade D pipe when in the normalized condition. It is not uncommon to find that Yoloy (or comparable alloy steel) in the form of 5-⅞-in. o.d. pipe will drill more than 130,000 ft. without failure. The particular instance in mind involves a 10,000-ft. string weighing 247,000 lb.

Strength of Furnace Castings

CONSIDERING the fundamental importance of tensile and compressive strengths in the design of furnace castings for the support of tubes, it is strange that such information has not been obtained. In explanation it may be said, however, that the obtainment of strength data at elevated temperatures is indeed difficult. In fact, the temperatures are so high for such services that they are at or near the borderline temperature at which nearly all ferrous materials fail completely at almost any load, and in addition the specimens deteriorate rapidly by corrosion.

In the fact of this dirth of design information, the recommendations of the International Nickel Co. in Nickel Cast Iron News of September 1940, are of significance in spite of the fact that scant information is given. With regard to the strength of Ni-Resist iron at 1,500° F., the following statement is made:

"We have comparatively little information and only three good tests at 1,500° F. However, they all show the tensile strength at 1,500° F., in a short-time test, to be very close to 30 per cent of the room temperature strength. We would recommend, therefore, that 25 per cent of the room temperature strength be the one that is used.

"Regarding compressive strength, we have no data whatever on Ni-Resist and we can only assume that it will be about three times the tensile strength in pounds per square inch, which is about the ratio for gray iron. We must remember, however, that this ratio of compressive strength to tensile strength may not hold at elevated temperatures."

Welding Terms

Atomic Hydrogen Welding

This type of welding is defined as an alternating current arc-welding process wherein the welding heat is obtained from an arc between two suitable electrodes in an atmosphere of hydrogen. Thus, it would be classed as one of the "fusion welding" processes, as a nonpressure welding process, and as a special case of "shielded arc" welding in which the shielding medium is hydrogen.

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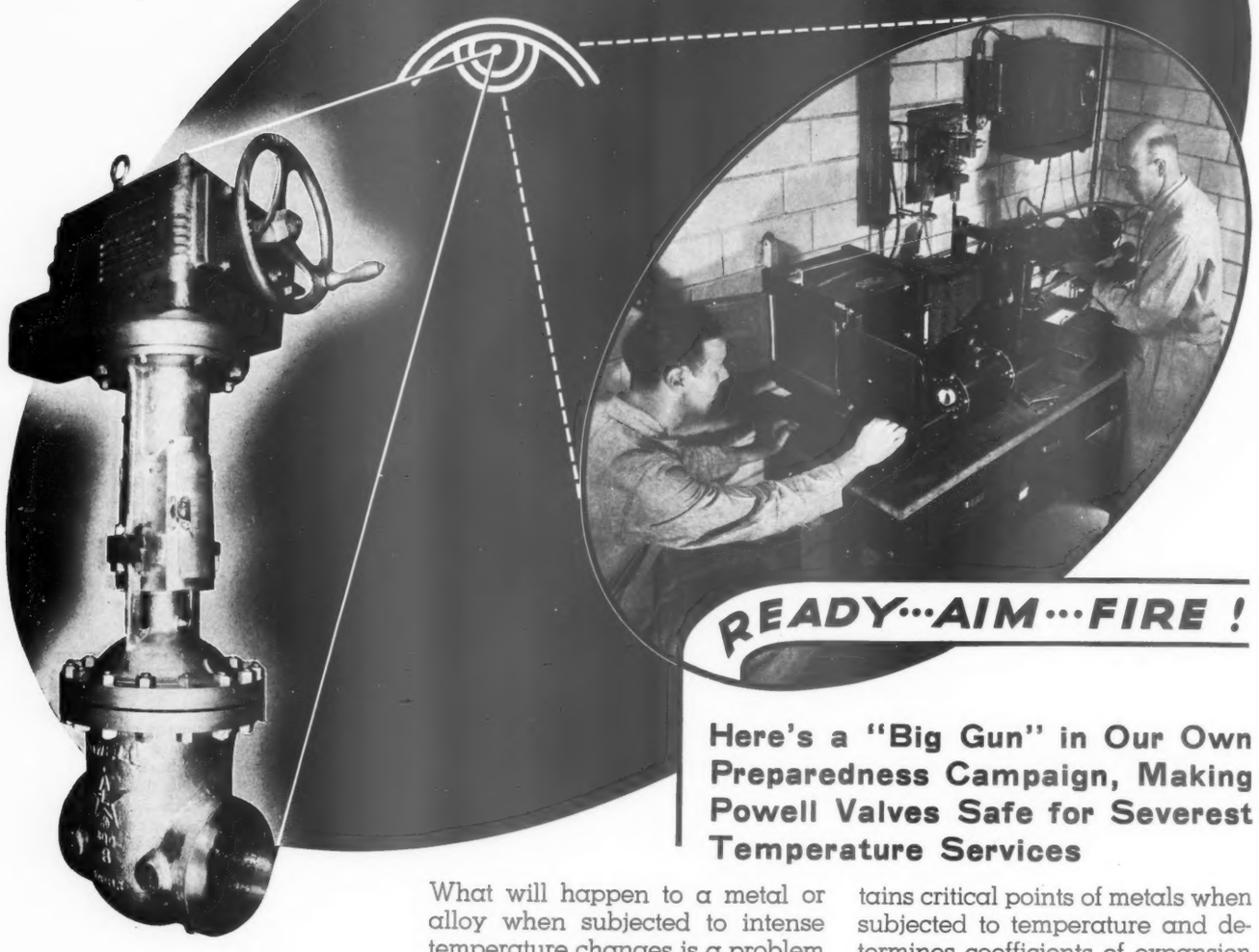

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Pipe-Line Activity

Stanolind Considers Two Gasoline-Line Projects

Stanolind Pipe Line Co., subsidiary of Standard Oil Co. of Indiana, is reported to be considering the construction of two pipe-line projects in 1941 which may involve the laying of pipe amounting to something less than 500 miles as a maximum for both projects together. One of the projects is for the construction of a line from the terminal of the Standard Oil Co. of Indiana gasoline pipe line at Council Bluffs, Iowa. This may be built to Sioux City, Iowa, and possibly as far as Sioux Falls, S. D. It is possible that a branch line may be built to Des Moines, Iowa. Pipe for this line would be 6-in. The other system being considered is for an 8-in. gasoline line running southeastward from the Standard refinery at Whiting, Ind., to central Indiana.

Gulf Starts Crude Shipments From Tulsa to Philadelphia

Gulf Refining Co. starts shipments of crude oil on December 12 which will be transported by an unusual hookup through a series of pipe lines between Glennpool, Okla., near Tulsa, and the company's refinery near Philadelphia, Pa. Shipments will consist of mixed northern Oklahoma crude which will be delivered by Gulf pipe lines from the Pawnee, Cushing, and Perryman pumping stations in Oklahoma to Oklahoma Pipe Line Co.'s pumping station at Glennpool. Plans call for deliveries at the Philadelphia plant at the rate of 10,000 bbl. per day.

It is anticipated that the first part of the oil to be transported in this manner will arrive at Philadelphia in about 30 days. Between Glennpool and the eastern destination none of the oil will be transported by the Gulf lines; it is reported that these are loaded to capacity.

The route followed by the shipments is as follows: Glennpool to Wood River, Ill., Oklahoma Pipe Line Co. and Ajax Pipe Line Co.; Wood River, Ill., to Negley, Ohio, by Illinois Pipe Line Co.; Negley, Ohio, to Cook's Ferry, Pa., by Tuscarora Oil Co., Ltd. From Cook's Ferry, Pa., shipments will be made through South West Pennsylvania Pipe Lines, Southern Pipe Line Co., Pure Oil Pipe Line Co., Keystone Pipe Line Co. and National Transit Co. through junction points at Morgantown, W. Va., Watson, Pa., Millway, Pa., Mathews Tank Farm, Pa., and Chester Junction, Pa., whence oil goes to the terminal at the Gulf refinery near Philadelphia. This is the first time that the Gulf organization has shipped oil overland by pipe line from the Mid-Continent to Philadelphia.

S.E.C. Considers Status Of Panhandle Eastern

WASHINGTON, D. C.—Panhandle Eastern Pipe Line Co.'s proposed refinancing of $22,500,000 of 4 per cent bonds has run into difficulties as result of the company's undetermined status under the Public Utility Holding Company Act and because of a pending antitrust suit involving Panhandle's relationship to Columbia Oil & Gasoline Corp.

Difficulties at the Securities Exchange Commission arise from charges made by former Sen. Robert Bulkley, of Ohio, that Panhandle's pending application for exemption from provisions of the Holding Company Act was not filed in good faith. Mr. Bulkley represents Missouri-Kansas Pipe Line Co., which owns 42 per cent of Panhandle's common stock. He contends that Panhandle is controlled by Columbia Oil & Gas and argues that the $12,000,000 3 per cent bond issue proposed by Panhandle should be held up until Panhandle's exemption application is decided.

In an effort to clear up some of the difficulty, Panhandle has notified the S.E.C., in an amendment to its registration statement, that it had begun negotiations to sell all its stock holdings in Central Distributing Co., a wholly owned subsidiary, which operates as a gas utility in Kansas and Missouri. Upon consummation of this sale, Panhandle said it would cease to be a holding company as defined in the utilities act, and thereupon would withdraw its application for exemption from provisions of the act.

Moreover, the Department of Justice has been consulted and has taken the position that the question of Panhandle's exemption from the Holding Company Act should not be taken up by the S.E.C. in the present case because of the fact that this question is directly related to issues involved in the pending antitrust suit which it is hoped will be settled soon. This suit might force Columbia Oil & Gas to divest itself of any control which the corporation may have over Panhandle.

In addition to these complications, none of which have been resolved, underwriters named by Panhandle for the $12,000,000 bond issue have threatened to withdraw if they are forced to include in the prospectus a statement that the issue may be of doubtful legality.

Consultations between all parties involved have not yet resulted in any solution which would permit S.E.C. to clear the issue and thus pave the way for the $22,500,000 refunding.

In addition to the $12,000,000 issue, to be sold publicly, Panhandle proposes to sell privately to certain banks and insurance companies $6,250,000 of serial bonds and $5,000,000 of serial notes. Proceeds would be used for the redemption of $22,500,000 outstanding 4 per cent first mortgage and first lien bonds, Series A, due March 1, 1952.

Panhandle has filed with S.E.C. a new application, in substitution for the pending exemption petition, asking for an order by the commission declaring the company is not a subsidiary of Columbia Gas & Electric Corp., or of Columbia Oil & Gas Corp., or of Missouri-Kansas Pipe Line Co., under provisions of the Holding Company Act.

The Holding Company Act provides that the filing in good faith of applications of this nature shall exempt any applicant from any obligation, duty or liability imposed by the act upon the applicant as a holding company or as a subsidiary company, as the case may be, until the S.E.C. has acted upon the application.

Pipe-Line Shipments From East Texas Increase

AUSTIN, Tex.—Pipe-line runs of crude oil as reported by operators in the East Texas field for October showed a calendar daily average of 4,974 bbl. higher than runs for September, composite report for October as tabulated today showed for this world's largest field. Actual production days' daily average would show greater difference due to Texas Railroad Commission proration order limiting the huge field to 22 production days in September and 23 production days in October. Gross runs for October totaled 11,398,167 bbl., an increase of 409,070 bbl. over the September runs of 10,889,097 bbl. Based on calendar days each month, the October daily average was 367,683 bbl. and the September average was 362,709 bbl.

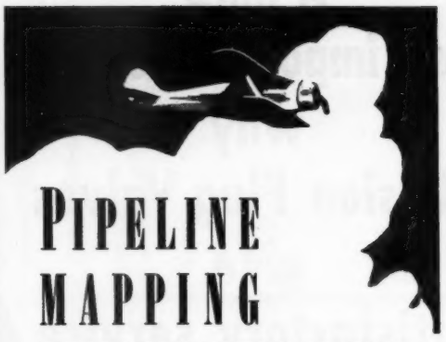
Littrell Has Contract for System at Picayune

NEW ORLEANS, La.—Ray Littrell, of the Littrell Construction Co., Inc., Opelousas, La., has opened an office in Picayune, Miss., to supervise installation of a natural-gas system in Picayune. The offices are located in the Pearl River Valley Railroad Depot Building.

A $220,000 bond issue was recently passed in the city for the natural-gas system.

Milwaukee Project Is Abandoned Temporarily

MILWAUKEE, Wis.—A proposed project of the Natural Gas Pipeline Co. of America to lay a pipe line across the Illinois State line into Wisconsin has been abandoned temporarily, it has been disclosed. George P. Garver, vice president and manager of the firm's Wisconsin division, said the decision was brought about primarily through inability to obtain from the state Highway Commission a permit to cross state highways with the line.



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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Last week's completions totaled 507 wells which was within one of the total for each of the preceding 2 weeks. Oil wells increased by 27 over the week before last; there were 16 fewer gas wells and 12 fewer dry holes.

Production rose to 3,602,000 bbl. or 276,275 bbl. more than last week. It remained, however, 166,953 bbl. below that of the week ended November 23. The fluctuation is almost entirely due to variations in Texas' production which rose 255,250 bbl. during the week. Illinois showed that it is now on a more or less normal basis by increasing its production slightly. This reversal of the gradual decline for the past few weeks was due to development in White and Hamilton counties and also to the completion of good wells in Centralia and the maintenance of Salem's production by recompleting old wells in lower pays. There were no other significant changes in production, except in Oklahoma where there was an increase of 16,225 bbl., of which over half was from Oklahoma City.

The most significant developments of the week were:

(a) The discovery of oil in the Silurian of West Texas. The Silurian produces less oil than any other system in the United States. Some Hunton production is probably attributable to rocks of this age as well as the Clinton production of Ohio. Michigan's wild gas well is also producing from Silurian rocks and it is a singular coincidence that the two latest discoveries from rocks of this age were made as far apart as West Texas and Michigan by the same company, Gulf Oil Corp.

(b) The discovery of crude on Red Fish Reef in Galveston Bay, Texas, will make this active area more important than ever. Most of the bay has been leased and, as there are several good structures known, it may provide an important increase to the nation's crude reserves.

(c) A new field has been discovered in the West Bay prospect in the Mississippi Delta. This, added to the Galveston Bay activity, will undoubtedly spur drilling offshore along the Gulf Coast, provided it is not impeded by federal claims to this oil.

(d) The Woodbine sand discovery at Hawkins, Wood County, Texas, has been confirmed and will probably start a very active lease play. The well would probably be considered as relatively unimportant were it not for the fact that the loiner well which brought in East Texas was just as discouraging. Local operators do not expect another East Texas but they are not forgetting the disparaging remarks they made just 10 years ago and are keeping quiet, except for leasing activity.

TEXAS GULF COAST: An outpost well in the Red Fish Reef field in Galveston Bay converted the gas-distillate field into an oil field. A Wilcox test in Lavaca County is logging oil and gas shows and other Wilcox tests are nearing critical depths (p. 76).

WEST TEXAS: The Silurian lime has proven productive in Ward County, where a wildcat was completed in that formation at a plugged-back depth of 7,073 ft. The Ordovician area south of Tubb and southeast of Sand Hills in Crane County was extended ½ mile and is within 3 miles of the Sand Hills field. The 325th well has been completed on the Gulf Goldsmith lease without a dry hole (p. 77).

ROCKY MOUNTAINS: The Hiawatha gas field is extended 1 mile to the north on the Wyoming side of the field. Plans are announced to give Rio Blanco County, Colorado, a test to the Pennsylvanian on the Meeker structure near the Rangely field (p. 88).

OHIO: Three wells in southeastern Ohio are headed for deeper pays in the search for gas to reinforce the state's dwindling supply (p. 84).

KANSAS: Burrton and Chase received small extensions during a week of more than average routine activity (p. 69).

LA-ARK-TEX: Dry gas, estimated at 25,000,000 cu. ft., is reported from a deep test in the Athens area southeast of the Homer field in Claiborne Parish. The deep Lisbon test has encountered another sand below 8,900 ft. This well has now reached contract depth and several sands have now to be tested (p. 85).

NEBRASKA: A Hunton lime producer was found ¾ mile north of Falls City. Geologists consider this a new structure rather than an extension to the Falls City pool (p. 69).

OKLAHOMA: Wildcat wells in the Wetumka area prove interesting while routine development continues over the rest of the state (p. 70).

WEST VIRGINIA: Two deep tests in the Kanawha gas field are headed for the Clinton sand in an attempt to determine the importance of a recent discovery in that sand. In Harrison County a test is at 8,911 ft. and is nearing the record depth for the state (p. 80).

LOUISIANA GULF COAST: A new oil field is assured the Mississippi Delta as a wildcat on the West Bay prospect, Plaquemines Parish, recovers pipe-line oil on a drill-stem test. Deep tests in the Paradis area, St. Charles Parish, and the Franklin area, St. Mary Parish, are showing disappointing results (p. 92).

SOUTHWEST TEXAS: A wildcat on the extreme east side of the Agua Dulce field, Nueces County, is preparing to test. New producing horizons have been found in the McFaddin and Bruni fields in Victoria and Webb counties. A wildcat in Zapata County has logged a shallow sand and casing is being cemented for production test (p. 68).

EASTERN TEXAS: Manziel 1 Morrison, Wood County Woodbine sand discovery, gaged 288 bbl. oil and 192 bbl. water. Two other tests are starting and several permits have been filed for additional tests. This discovery may start off another boom in the East Texas area as the structure has been favorably considered for some time (p. 93).

NORTH CENTRAL TEXAS: Outposts 1 mile northwest and 2 miles southeast of the Vogtsberger field in Archer County are being watched. The southeast outpost is running low. The Griffin field, also in Archer County, has been extended 1 mile east. Three new locations have been staked near this well which is higher than the discovery. A field opener in Wilbarger County and two others in Jack County are still in completion stages or are drilling ahead after logging important shows (p. 81).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended December 7, 1940)

	Oil	Gas	Dry	Total	1940 total comp. to date	1939 total comp. to date
N. Y., Pa., and W. Va.	68	13	6	87	5,558	3,412
Ohio	8	20	11	39	1,155	827
Indiana	4	0	2	6	460	329
Kentucky	3	0	2	5	482	671
Illinois	50	0	16	66	3,585	3,462
Michigan	13	0	9	22	1,096	1,379
Kansas	29	3	9	41	1,684	1,284
Oklahoma	16	3	7	26	1,689	1,647
Texas:						
North Central Texas	29	2	9	40	2,693	2,283
West Texas	22	0	5	27	1,701	1,738
Texas Panhandle	9	0	0	9	538	419
Eastern Texas	11	0	3	14	593	668
Texas Gulf Coast	17	1	1	19	1,154	1,274
Southwest Texas	26	0	9	35	1,960	2,280
Total Texas	114	3	27	144	8,639	8,643
North Louisiana	15	2	5	22	625	508
Louisiana Gulf Coast	12	2	1	15	958	698
Total Louisiana	27	4	6	37	1,583	1,206
Arkansas	3	0	2	5	175	237
Montana	2	2	1	5	224	165
Wyoming	0	1	2	3	156	128
Colorado	0	0	0	0	17	20
New Mexico	5	0	0	5	502	546
California	12	0	1	13	954	875
Miscellaneous	1	0	2	3	226	58
Total United States	355	49	103	507	28,185	24,889
Total previous week	328	65	115	508		
Week ended Dec. 9, 1939	374	34	139	547		

SOUTHWEST TEXAS

Important Tests Extend Area On Agua Dulce Structure

By

F. L. SINGLETON

CORPUS CHRISTI, Tex., Dec. 9.—F. A. Gillespie & Son 1 Dabney, located about 3 miles southeast of Banquette, and approximately 2 miles east of the Agua Dulce field, Nueces County, held considerable interest among Southwest Texas operators, as preparations were being made for a production test. This well was drilled to a total depth of 7,503 ft. and casing was cemented for a production test following an electrical survey and sidewall cores which showed gas sand at 7,205-20 ft. While the well is expected to produce gas or distillate, the completion would open considerable acreage for development, flanking the east side of this large structure which recently received important production on the extreme southeast flank.

On the southeast flank of the above structure, and located northwest of Wellington 1 McCoy which opened crude production from a new sand, Texon Royalty Co. 1 Walton was completed for an initial production of 125 bbl. of distillate per day flowing through a 7/64-in. choke from perforated casing at 6,900-10 ft. The completion indicates that the well is located structurally too high to produce oil, and that the discovery well is located just off the gas cap.

Stanolind 2 Thompson, northwest of gas production in the Riverside field, Nueces County, continues to drill ahead in sand below 7,015 ft. and additional showings have been logged. Sand with an oil odor was cored at 6,834-37 ft., and gas sand at 6,901-44 ft. In the Robstown field, Jay Simmons acquired a farmout lease from Shell Oil Co., Inc., and material is being moved in for 1 Meese located in the center of combined Lots 4 and 5, Block 16, George H. Paul's subdivision in the M. L. De Herrera grant. The well is a southwest offset to Richardson Petroleum Co. 1 Studer.

SUMMARY OF COMPLETIONS

Lower Gulf Coast District

	No.	Prod.	Footage
Oil wells:			
Wade City-Orange Grove	4	437	19,859
Other fields	4	250	23,771
Distillate wells: Fields	1	10	5,885
Dry holes: Orange Grove	1	.....	5,147
Total	10	.....	54,662

Laredo District

Oil wells: Lundell	4	208	6,040
Colorado	4	613	11,939
Glen	2	214	4,383
Other fields	7	455	7,645
Dry holes: Lundell	1	.....	1,548
Other fields	1	.....	1,425
Wildcats	4	.....	10,951
Total	23	.....	53,931

San Antonio District

Dry holes: Fields	1	.....	2,246
Wildcats	1	.....	3,099
Total	2	.....	5,345

New Pay in McFaddin

A new producing horizon for the McFaddin field, Victoria County, was indicated as Transwestern 18-E J. A. McFaddin recovered 360 ft. of gas-cut mud, 540 ft. of oil-cut mud,, and 180 ft. of salt water on a 19-minute drill-stem test at 5,510-21 ft. Working pressure built up to 520 lb. This is the third sand section to be logged in the field, and the well is drilling ahead. Other known sands in the field are logged at 4,400 ft. and 5,200 ft.

H. R. Cullen 1 Washburn, completed several weeks ago as a new Wilcox sand discovery in La Salle County, has been killed and the operator is attempting to complete the well as a gas producer. The well was originally completed through perforated casing at 4,860-67 ft., and it is reported that production has declined and that salt water has increased since completion. Location for another well was made by the operator who is rigging up for 3 Washburn in Section 88, H.&G.N. Survey, about 3,000 ft. northwest of the discovery well.

Sun 2 Mateo-Saenz, reported the previous week as extending the North Rincon field, Starr County, 1,700 ft. north, flowed 126 bbl. per day through a 7/64-in. choke. The well was drilled to a total depth of 5,266 ft., and production was obtained by perforating casing at intervals from 4,395-4,403 ft., which is a new horizon for the field.

New Bruni Sand

In the Bruni field, Webb County, Highland Oil Co. 4-A Bruni opened a new producing horizon for the field when it flowed 30 bbl. oil and 7 bbl. salt water per day through a 1/8-in. choke from perforated casing at 3,938-3,941½ ft. This well was originally drilled to a total depth of 3,403 ft., and was deepened to a total depth of 3,974 ft.

In southeastern Zapata County and located in the El Grullo grant No. 1, Block 84, Hagen & Stewart were preparing to test 4 Martinez after logging 10 ft. of oil sand at 1,264-74 ft., the total depth. Five and one-half inch casing was cemented at 1,265 ft. The operators have drilled several wells in this area, and the present well is located about 500 ft. northeast of 1 Martinez, a dry hole.

Tinney Creek Field

Along the Balcones fault line district and located in the newly opened Tinney Creek field, Wiegand Brothers 1 E. E. Brown is reported preparing to test after cementing casing at 2,450 ft. This field is located 1½ miles north of the Salt Flats field, Caldwell County, and was opened by the operator's 1 W. C. Hill, completed in the Austin chalk at 2,347-70 ft. Northeast of the discovery well, the operators started drilling operations on 1 Freeman in the Robert Carr Survey.

In the Tangleford area, Lee County, Fred Pederson et al 1 Brown, swabbed salt water with a good show of gas through perforated casing at 7,384-90 ft., and swabbing will be continued after the tubing is lowered several feet. This well is one of the deepest ever drilled in the district, having reached a depth of 8,786 ft., and several interesting showings have been logged. Southwest of this area and located in the L. P. Rucker Survey, Humble 1 Melde is drilling in shale below 4,200 ft.

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Calhoun County

Duck Bay field: Coronado Corp. 9-A Welder, 61 bbl., 3/32-in. choke, perf. casing 5,660-61 ft., T.D. 6,025 ft.

Jim Wells County

Ben Bolt field: Earl Calloway 1 Smith, 10 bbl., jetting, perf. casing 4,865-85 ft., T.D. 5,602 ft.
Henshaw field: Henshaw 1 Boerner, 10 bbl. distillate, 500,000 cu. ft. gas, 1/8-in. choke, perf. casing 5,134-36 ft., T.D. 5,885 ft.
Orange Grove field: Atlantic 2-B Blaschke, 116 bbl., 1/8-in. choke, perf. casing 5,060-70 ft., T.D. 5,091 ft.
Tide Water 3 Natho, dry, T.D. 5,147 ft.
Wade City field: Anderson-Prichard 8 Mueller, 174 bbl., 7/64-in. choke, perf. casing 4,795-98 ft., T.D. 4,926 ft.
Arkansas Fuel 3 Nollkamper, 56 bbl., 18 hr., 5/32-in. choke, perf. casing 4,904-08 ft., T.D. 4,926 ft.
T. H. McElvain 4 Blaschke, 91 bbl., 7/64-in. choke, perf. casing 4,906-09 ft., T.D. 4,916 ft.

Nueces County

South Clara Driscoll field: Wellington 8 Richardson, 65 bbl. 12 hr., 1/8-in. choke, perf. casing 5,082-88 ft., T.D. 6,661 ft.

Victoria County

Heyser field: Gulf 45 Traylor, 114 bbl., 1/8-in. choke, perf. casing 5,478-80 ft., T.D. 5,483 ft.

LAREDO DISTRICT

Duval County

Casa Blanca field: Magnolia 5 Duval County Ranch Co., 50 bbl., pumping, sand 1,036-53 ft., T.D.
Cedro Hill field: Magnolia 8 Duval County Ranch Co., dry, T.D. 1,425 ft.
Magnolia 16 Duval County Ranch Co., 28 bbl., jetting, sand 1,448-51 ft., T.D.
Hoffman field: Duval Oil Corp. 9 Hoffman, 83 bbl., pumping, sand 2,749-53 ft., T.D.
Lundell field: Government Wells Corp. 49 Lundell, 90 bbl., ½-in. choke, sand 1,517-21 ft., T.D.
Magnolia 19 Duval County Ranch Co., dry, T.D. 1,548 ft.
Moore & Massingill 7 Duval County Ranch Co., 40 bbl., jetting, sand 1,510-15 ft., T.D.
M. L. Massingill 8 Duval County Ranch Co., 37 bbl., jetting, ¼-in. choke, sand 1,498-1,510 ft.
M. L. Massingill 9 Duval County Ranch Co., 41 bbl., jetting, ¼-in. choke, sand 1,489-94 ft., T.D.
Wildcat: Sam Cunningham 1 Escobar, dry, T.D. 3,852 ft.

Hidalgo County

Samfordyce field: John Messenger 1-A Chapa, 30 bbl., 3/32-in. choke, sand 3,408-17 ft., T.D.
Phillips 2 Villareal, 133 bbl., 1/8-in. choke, perf. casing 4,126-34 ft., T.D. 4,195 ft.

Jim Hogg County

Colorado field: C. Andrade 3-D Trevino, 215 bbl., ¼-in. choke, sand 2,958-66 ft., T.D.
Humble 24 King Ranch, 127 bbl., 7/64-in. choke, T.D. 3,037 ft.
V. F. Neuhaus 4-A Trevino, 209 bbl., ¼-in. choke, sand 2,975-86 ft., T.D.
Sun 12 Thaxton, 62 bbl., pumping, sand 2,931-50 ft., T.D.
Kelsey field: Humble 20 Bass, dry, T.D. 4,753 ft.
Wildcat: Jay Simmons 1 Gutierrez, dry, T.D. 2,718 ft.

Starr County

Boyle field: Sun 1 Vela, 19 bbl., 15 hr., 1/8-in. choke, perf. casing 3,188-91 ft., T.D. 3,225 ft.

Webb County

Glen field: Jay Simmons 4 Yeager-Stroman, 130 bbl., pumping, sand 2,188-98 ft., T.D.
Transwestern 3 Yeager-Stroman, 84 bbl., pumping, sand 2,176-82 ft., T.D. 2,185 ft.
Wildcat: Smith Story et al 1 Brodie, dry, T.D. 2,521 ft.

Zapata County

Wildcat: Bid-Rich Oil Co. 1 Montemayor, dry, T.D. 2,267 ft.
Neilson & Palmer 1 Maryland Trust Co., dry, T.D. 2,311 ft.

Live Oak County

White Creek field: Clark & Korges, 1 Adams, 112 bbl., 7/64-in. choke, perf. casing 1,507-15½ ft., T.D. 1,551 ft.

SAN ANTONIO DISTRICT

Caldwell County

Bee Creek field: Ralph Ogden 7-A Miears, dry, T.D. 2,246 ft.

Zavala County

Wildcat: R. E. McClung 1 Munger Ranch & Cattle Co., dry, T.D. 3,009 ft.

SOUTHWEST TEXAS DRILLING REPORT

Calhoun County

McSpadden Co., et al I E Clark, 9 mi. S of Port Lavaca, T. Hennessee Sur., drilling shale 5,215 ft.
R. N. Ranger et al 1 Stutzenbecker, 4½ mi. N of Port Lavaca, V. Garcia Sur., drilling shale 4,566 ft.

De Witt County

George B. White 1 Poetter, outpost well Slick gas field, M. Mewell Sur., coring shale 4,168 ft.

Live Oak County

Henderson Coquat 1 Marrs McLean, NW of Oakville field, drilling shale 2,970 ft.

Cameron County

Pure 4 Gatewood, San Martin grant, drilling sandy shale 7,420 ft.

Nueces County

Seaboard 1 J. O. Chapman, 1 mi. E of Luby field, drilling shale 7,510 ft.

San Patricio County

Abbott & Traxler, 1 Toland, Geronimo Valdez Sur., spudded.

Water-Flooding Project Started

K. B. Nowles, engineer, of Abilene, Tex., is in charge of the water-flooding project for the old Woodson field in southern Throckmorton County, West Central Texas. Dean Brothers, Fort Worth, recently purchased the property, which included 300 acres and 80 wells, from the Woodley Petroleum Co., of Houston, which developed the field in 1931. Out of the original 80 wells there are still 72 producing an aggregate of about 20 bbl. daily.

Work has already started on the drilling of 18 input wells; however, about 10 or 12 of the old producers will be cleaned out and reworked before the secondary recovery project is actually put into operation. A 3-in. water line to the Humble Lake is nearing completion, and engine and pumps have been set on foundation in the pressure house. The first unit to be flooded will be an 80-acre tract. Water is to be fed into the injection wells at the rate of from 45 to 90 bbl. per minute.

By
STAFF CORRESPONDENT

Probable New Structure Near Forest City, Nebraska

ST. JOSEPH, Mo., Dec. 9.—Geologists decided the past week that a new structure had been opened at Falls City in Richardson County, Nebraska. The potential pool opener is 1 Walmsley, drilled by Taylor Drilling Co. of Centralia, Ill., three-quarters of a mile north of production in C SW NW 8-1n-16e. The well, with an elevation of 964 ft., found Hunton limestone at 2,372 ft. and when it was drilled in it made considerable oil and some water. At this writing it was believed the water difficulty could be corrected.

Whatever the outcome of this well, geologists will consider it to be on a structure north of the one now producing at Falls City. It tends to improve chances of a wildcat which Liberty Development Co. of St. Joseph proposes to drill 2½ miles north of production. This is 1 Fehr, derrick for which is standing in NW SE 21-2n-16e, Richardson County, and E. J. Shaffer of Hutchinson, Kans., is moving in a rotary to drill it. Drilling is to start the coming week.

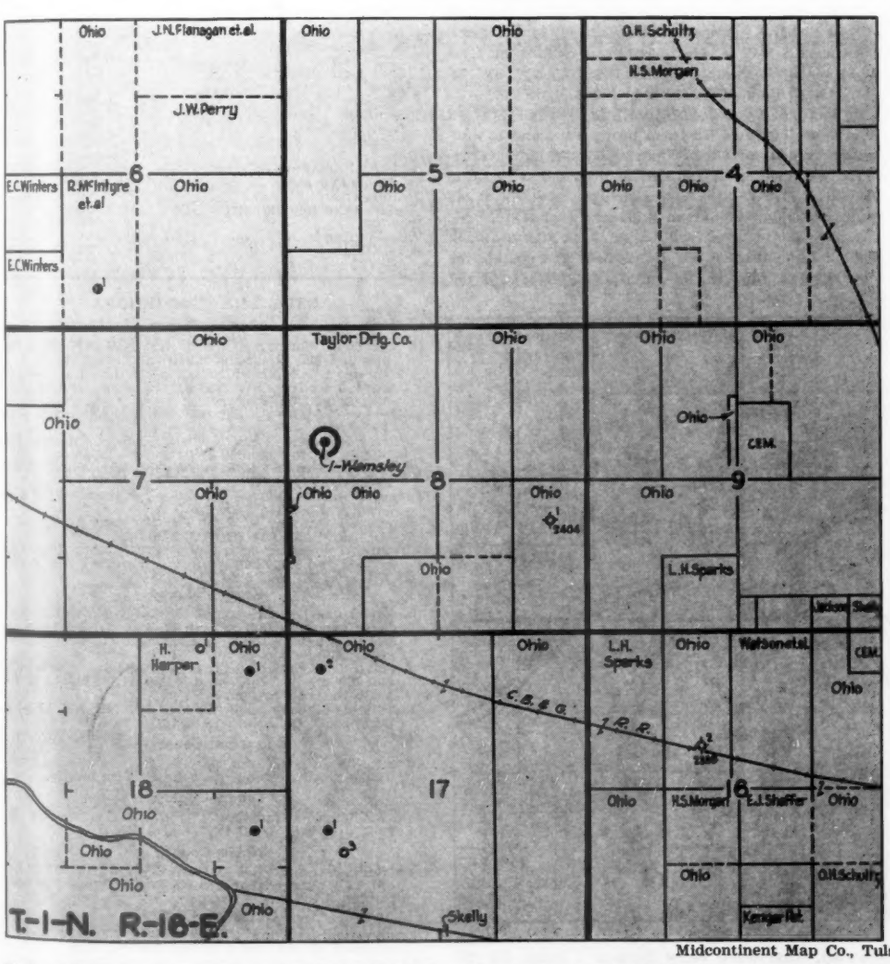
Skelly Oil Co. drilled 3 Wallraff in proven territory, SE NW SE 20-1n-16e, finding Hunton lime at 2,224 ft. and announcing a fillup in 4 hours after drilling plug and deepening to 2,251 ft. It was Skelly's sixth producer of the pool.

At the west side of the pool E. J. Shaffer had more water than oil in 3 Sandrock, NW SW NW 20-1n-16e. Hunton lime, topped at 2,260 ft., was drilled to 2,270½ ft. where the test was shut down for orders. At the southeast corner of the pool Midland Oil Co. 1 Towle in NE NW NW 20-1n-16e, began making about 85 per cent water. R. L. Campbell of St. Joseph, who was about to drill a northeast diagonal offset in a 10-acre location, skidded rig back from 1 Towle and relocated in SE SW 20-1n-16e. His well will be 4 Schock.

Nearing Hunton lime were the Robert McIntyre 1 Hill-Hough in SE SW 6-1n-16e; McIntyre 1 Boice in NW NE 18-1n-16e, and W. H. Martgan 1 Smith in C NW NW 31-3n-16e, Richardson County. On the east edge of Salem in Richardson County the Forest City Basin Syndicate abandoned 1 Windle in SE NE SE 3-1n-15e, at total depth of 2,605 ft. Hunton top was 2,565 ft. In the Salem-Dawson neighborhood, Eckert & Longmire abandoned 1 Ast in SW SW SW NW 6-1n-14e, at 2,310 ft. No other particulars were given.

Clyde Pulse of Hutchinson, Kans., moved rotary tools to 1 Stauffer in SW SW NE 22-1n-13e, Richardson County, and is drilling for M. M. Travis of Houston and A. S. Kaplan of Tulsa, who took over the wildcat from Uhri Oil Co. Depth was 1,060 ft. Powers & Stalder 1 Lee was a location in NE NW NE 16-1n-14e. Richardson County, a southwest diagonal offset to the old Arab Petroleum Co. 1 Ogle.

In Missouri it was learned that the Indian Territory Illuminating Oil Co. has taken a block in northeast Atchison County, near Westboro, with a drilling agreement giving a 6-month deadline. Kilby & Flory 1 Meyer in SE NE NW 27-62n-39w, Holt County, Missouri, set 168 ft. of surface pipe and prepared to drill ahead.



Midcontinent Map Co., Tulsa

Taylor Drilling Co. 1 Wamsley, C SW NW 8-1n-16e, found production in the Hunton lime and is believed to be a new pool opener, although it is only ¾ mile from Pawnee Royalty (now Ohio) 1 Boice

NEBRASKA DRILLING REPORT

Nemaha County

Jackson & Rust 1 Shafer ..... C SE SE 19-4-16
Lansing 860 ft., drilling 1,547 ft.

Richardson County

Eckhart et al 1 Ast ..... SW SW NW 6-1-14
Hunton 2,301 ft., coring.
W. H. Martgan et al 1 Smith .. C E½ NW NW 31-3-16
Drilling 480 ft.

Sarpy County

L. H. Hough et al 1 Timm .... C S½ SW SE 15-13-12
Drilling 230 ft.

KANSAS

Although activity in Kansas was more than double that of last week, there was little outside of routine activity to report.

Productive limits of the vast Burrton field of Harvey and Reno counties were spread ¼ mile northward on the Harvey County side.

Valley Osage Oil Co. 1 Frederick, in the CSL NW NW 17-23-3w, topped the Mississippian chat at 3,275 ft., drilled to 3,335 ft., and set 5-in. casing. On being drilled in, first oil was found at 3,344 ft., and first pay topped at 3,360 ft., being penetrated an additional 8 ft. to 3,368 ft., total depth.

On last field report the well was flowing by heads. Output is estimated at 350 bbl. oil per day.

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
Oil wells: Silica	1	*240	3,310
Trapp	2	*2,464	7,769
Stoltenberg	3	*4,436	9,909
Bemis	2	*5,538	6,999
Bornholdt	1	*150	3,351
Cunningham	1	*464	3,462
Hall-Gurney	3	*8,148	9,018
Zenith	4	*1,979	15,308
Other fields	11	*7,542	30,014
Wildcat	1	*495	2,661
Gas wells: Cunningham	2	†56	8,412
Other fields	1	†12	3,472
Dry holes: Bornholdt	1		3,408
Other fields	3		8,433
Wildcats	5		10,400
Total	44		126,026
Recompletions	3	4,644	

*Barrels. †Million cu. ft.

Arbuckle Extension in Chase

Arbuckle lime production in the Chase pool of western Rice County was extended ½ mile northwestward.

E. C. Moriarity, A. S. Ritchie, and McPherson Drilling Co. 1 Grizzell, in the SW SW NE 8-19-9w, was showing for a commercial producer from the Arbuckle, according to field reports received.

Commercial oil was obtained shortly after operators drilled out cement plug in the casing set to test Arbuckle topped at 3,342 ft. Total depth was 3,244 ft. Other markers reported include the top of the Lansing-Kansas City lime at 2,871 ft. and the top of the Simpson sand at 3,320 ft.

McPherson Drilling owns six tracts totaling 880 acres in Sections 8, 9 and 17. All of these tracts, except one, are now held by Lansing or Arbuckle production.

KANSAS COMPLETIONS

Barton County

Kraft pool: Texas 6 Disque, SE SE SW 3-17-11w, swabbed 40 bbl. an hr., Arbuckle 3,295-3,304 ft., T.D.
Silica pool: Frank Hollow 5 Kovalsky, EL NW NE 18-20-11w, swabbed 16 bbl. an hr., Arbuckle 3,304-10 ft., T.D.
Prusa pool: Barnsdall 5 Rous, SE SE SW 28-16-11w, 3,000 bbl., Arbuckle 3,355-62 ft., T.D.

(Continued on Page 74)

By
STAFF CORRESPONDENT

Wildcat in Wetumka District Shows Gas; Will Drill Ahead

DEVELOPMENTS in Oklahoma during the past week were more or less of a routine character. Amerada Petroleum Co. completed its wildcat west of the West Seminole pool in N½ SW SW 30-9-6 for 460 bbl. in the Wilcox at 4,220-74 ft.

Wetumka Wildcats

Interest in the Wetumka area of Hughes County was centered in two outposts northeast of the city of Wetumka at midweek.

Barry Brothers 1 Fulks, SW SE NW 8-9n-11e, showed an estimated 6,000,000 cu. ft. of gas in the Gilcrease

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
Oil wells: Hewitt	7	*1,359	15,798
Dill	1	*1,001	3,575
Other fields	7	*397	18,658
Wildcats	1	*460	4,274
Gas wells: Fields	3	†141	11,008
Dry holes: Hewitt	2	.....	4,719
Other fields	1	.....	3,386
Wildcats	4	.....	15,247
Total	26	.....	76,665
Recompletions	3	3,132	.....

*Barrels. †Million cu. ft.

sand around 2,700 ft., but may be carried to the Cromwell sand, at 3,300 ft.

Scruggs et al 1 Black, NW NE NE 13-9n-10e, was at 2,170 ft., total depth, in the Booch sand, with pipe set and was drilling plug.

Ramsey Well to Be Plugged Back

Following the successful plugging back of wells from the Wilcox in the Seminole area, Mid-Continent Petroleum Corp. has announced that it will plug back its 1 Nottingham, NW NW SE 18-18-2e in the Ramsey pool of Payne County. This test was completed April 7, 1939, for a potential of 5,653 bbl. but production has fallen off and the Hunton is to receive a test around 4,700 ft.

Oklahoma City Drilling Activity

Potentials have been fixed for three recent completions in the Wilcox zone of the Oklahoma City field, while activity continued at routine stages during the week.

Phillips 1 Ethel in 34-12-3w made 943 bbl.; 1 Gus in 27-12-3w produced 344 bbl. Tower 5 Military in 34-12-3w made 502 bbl.

Phillips 1 Delton, at Eighth and Central, was drilling below 4,600 ft., and 1 Wadkins, at Tenth and Central, is a shutdown derrick. Phillips 1 Holtz, at Fourth and Geary, at 6,552 ft., was cleaning out for completion.

British American 4 Military, at First and Stiles, was drilling at 4,960 ft. Temple Thompson 1 Cary, at Sixth and Stiles, shot with 200 qt. at 6,550 ft., lost bailer and line in the hole and is fishing.

Clark & Co. 1 Lyons, at Fourth and Stiles, set pipe at 6,430 ft., total depth 6,432 ft., and was drilling plug.

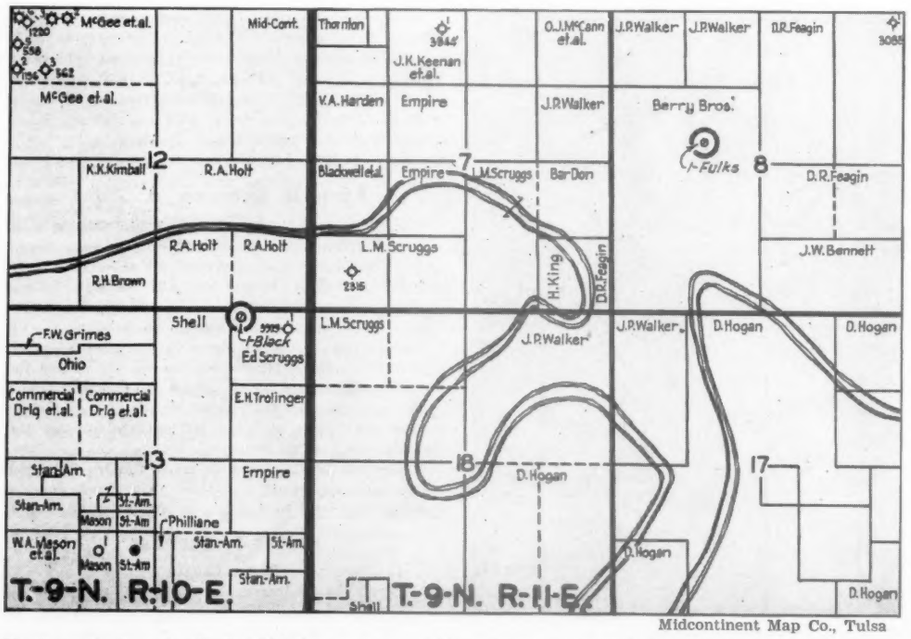
Cumberland Field

Although no completions were recorded in the Cumberland sector during the week, one well was showing production and nine others were under way. In Bryan County Pure 3 Little 106, SW NE NW 34-5s-7, is moving in derrick; 1 Park College 200, SW SW NE 27-5s-7, pumped 19 bbl. of oil in 12 hours; 2 Little 201, SW SE SE 28-5s-7, was drilling at 1,805 ft. in black shale and 2 Little 106, SW NW SW 28-5s-7, was drilling at 2,654 ft. in black shale.

In Marshall County Pure 4 Little 100, NE NW SE 29-5s-7, set 7-in. at 4,879 ft. in brown sand and is waiting for cement to set; 1 Thomas 203, SW NW NE 28-5s-7w, was drilling at 4,213 ft. in brown lime; 1 Little 204, NE NE SW 28-5s-7, was drilling at 4,073 ft. in green shale, top of Sylvan 3,777 ft.; 2 Metz 105, NE SW NW 28-4s-7, was drilling at 3,690 ft. in black shale; 3 Little 101, SW SW NE 28-5s-7, was waiting for cement to set under 7-in. run to 4,879 ft., corrected total depth 4,893 ft., and 1 Chrisman 104, NEC 29-5s-7, was rigging up cable tools.

AVERAGE DAILY PRODUCTION
LEADING OKLAHOMA FIELDS

	Dec. 7	Nov. 30
Allen	5,000	5,000
Billings	6,225	6,250
Burbank	7,425	7,400
South Burbank	7,300	7,325
Balance Osage	17,250	17,200
Blackwell district	3,350	3,350
Bristow-Slick	6,300	6,250
Chandler	1,050	1,050
Crescent	2,075	2,100
Cromwell	2,950	2,950
Cushing-Shamrock	9,250	9,225
Duncan	3,550	3,550
Edmond	3,925	3,950
Fish	2,975	3,000
Fitts	16,850	14,700
Jesse	2,050	2,050
Graham-Fox	2,275	2,250
Gray	850	850
Healdton	8,475	8,500
Hewitt	6,100	6,050
Keokuk	2,900	2,900
Konawa	1,100	1,100
Lucien	6,850	6,850
Moore	1,125	1,150
Northeastern counties	18,400	18,500
Oklahoma City	108,100	95,250
Olympic	1,775	1,800
Ramsey	3,600	3,600
Sasakwa	1,450	1,425
Sholem-Alechem	2,575	2,575
Seminole district:		
Bowlegs	6,375	6,450
Carr City	2,125	2,125
Dora	1,750	1,750
Earlsboro	3,900	3,900
East Earlsboro	1,800	1,800
South Earlsboro	450	450
Little River	6,300	6,325
East Little River	675	650
Maud	550	550
Mission	1,200	1,200
Seminole	6,275	6,275
East Seminole	1,075	1,100
Searight	1,975	1,925
Total Seminole	34,450	34,500
St. Louis-Pearson	22,200	22,150
Tatums-Tussy	4,700	4,650
Tonkawa-Garber-Thomas	3,550	3,550
Wewoka	1,550	1,550
Yale-Jennings	3,100	3,050
Total Oklahoma	419,725	403,500



Midcontinent Map Co., Tulsa

The increasingly active Hughes-Okfuskee area is steadily growing. Last week Berry Brothers 1 Fulks, SW SE NW 8-9n-11e, was making 6,000,000 cu. ft. of gas from the Gilcrease. Scruggs et al 1 Black, NW NE NE 13-9n-10e, was drilling plug after setting pipe in the Booch sand

OKLAHOMA COMPLETIONS

Carter County

Hewitt field: Turner 3 Ward, NE NW NW 28-4s-2w, pumped 235 bbl., sand 2,210 ft., T.D. 2,346 ft.
O'Conner 1 Gill, NE SE SE 17-4s-2w, dry, T.D. 2,563 ft.
Gibson 5 Griffin, SW NE SE 20-4s-2w, pumped 215 bbl., sand 2,048-82 ft., T.D.
Kerbow 2 McKee, CEL SW SW 20-4s-2w, dry, T.D. 2,156 ft.
Carter 7 Voorhees, SW NW SW 20-4s-2w, pumped 222 bbl. in 23 hr., sand 2,218 ft., T.D. 2,262 ft.
Turner 1 Stearns, C SW SW 21-4s-2w, pumped 300 bbl., sand 2,243-70 ft., T.D.
Turner 5 Stearns, NE SW SW 21-4s-2w, pumped 185 bbl., sand 2,142-60 ft., T.D. 2,270 ft.
Turner 6 Stearns, NE SW SW 21-4s-2w, pumped 130 bbl., sand 2,250-54 ft., T.D. 2,268 ft.
Turner 7 Stearns, CEL SW SW 21-4s-2w, flowed 72 bbl. oil and 3,000,000 cu. ft. gas daily, set 7-in. casing 2,300 ft., T.D.

Grady County

Chickasha gas field: Cooper 1-B Sanford, NW SW 23-5-8w, flowed 100,000,000 cu. ft. gas, sand 4,140-4,200 ft., T.D., perf. 4,106-20 and 4,158-70 ft., shut-in pressure 1,865 lb.
Sinclair 2-B Pooler, SE NE NE 22-5-8w, flowed 38,500,000 cu. ft. gas, sand 4,260 ft., T.D. 4,262 ft., 1,850 lb. rock pressure.
Knox field: McCasland 2 Woods, SW NE NE 17-3-5w, pumped 15 bbl., sand 1,793-1,810 ft., T.D.

Jackson County

Altus field: Altus 3 Maud, SE SW NE 15-1-20w, pumped 57 bbl., 7-in. casing 1,350 ft., T.D. 1,562 ft.

Logan County

Wildcat: Warren-Bradshaw 1 O'Flannagan, NW SE 20-19-2, dry, T.D. 4,670 ft., Viola 4,653 ft.

Noble County

Polo field: Stanolind 6-B DeFord, SE SW NW 27-22-2w, old well plugged back to 3,810 ft., pumped 10 bbl., Layton 3,760 ft.

Okfuskee County

Okemah field: Snyder 4 Berryhill, C SE NW 35-11-9, pumped 10 bbl., sand 1,485-1,500 ft., T.D.
Dill field: I. T. I. O. 2 Miller, NW SW 35-12-8, flowed 1,001 bbl., Cromwell 3,534-75 ft., T.D. 7-in. casing 3,533 ft.

(Continued on Page 83)

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CALIFORNIA FIELD REPORT

By

L. P. STOCKMAN

Impending Town-Lot Drilling May Wreck Curtailment Plans

LOS ANGELES, Calif., Dec. 9.—There appears to be a definite tendency to view the outlook for the future in a more favorable light on the part of California producers and refiners, but marketers do not appear overly sanguine with respect to encouraging market developments in the immediate future. Present opinions do not reflect a degree of optimism but rather one of hopefulness. A long-range view of the situation looks very encouraging due to the failure of prospectors to discover any new fields of primary importance for more than a year, but at the same time there are several virgin zones in existing fields that appear capable of precipitating extensive drilling programs whenever deeper drilling gets under way. Operators in the Wilmington field are expected to refrain from developing the Ford zone in the east end of the field for another year, but developments in the Inglewood field during the past few weeks indicate that extreme care must be exercised in order to prevent the starting of competitive development. It might be well to follow operations in the Inglewood fields during the next several weeks as there are three wells drilling ahead and two additional locations staked. Operators

SUMMARY OF COMPLETIONS

	No.	Prod.*	Footage
Oil wells: San Joaquin Valley	4	8,019	37,266
Dry holes: San Joaquin Valley	1	.....	11,576
Oil wells: Los Angeles Basin	9	4,426	36,509
Oil wells: Coastal district	1	310	3,907
Total	15	.....	89,258

*Barrels.

in this field hold the usual formal leases which provide for offset drilling and the prevention of drainage. For this reason if any operator begins to develop the deep virgin zone other operators must follow suit. At the present time Inglewood presents the only threat to the current degree of stability.

Considerable progress has been made in curtailment during the past 60 days and a concerted attempt is being made to remove some of the remaining rough spots. Kettleman Hills operators have effected a substantial reduction in crude-oil production during the past 2 months and much of the excess production in the Richfield district has been eliminated. The Conservation Committee, through its administrator, L. P. St. Clair, is building for the future as it is generally agreed that effective curtailment will accomplish two very important functions. It will (1) weaken any attempt on the part of the federal Government to secure control of the California oil industry by removing any cause for intervention, and (2) will enhance stability by permitting a reduction in stocks of gasoline. For several years it was fuel oil that was a drug on the market, but with a brisk market for fuel oil and diesel the cycle has turned and refiners now find themselves with excessive stocks of gasoline and tops. The large potential production of California precludes any suspension of curtailment operations for several years and, if necessity demanded, crude-oil production could easily be stepped up well over 1,000,000 bbl. per day.

Current daily production of leading California fields for the past week follows:

	Dec. 7	Nov. 30
Wilmington	82,150	81,425
Midway-Sunset	43,550	39,575
Long Beach	41,750	41,925
Kettleman North Dome	38,250	38,425
Ventura Avenue	33,500	33,725
Coalinga	31,825	35,750
Santa Fe Springs	25,050	24,800
Huntington Beach	24,475	24,750
Dominguez	21,075	21,750
Santa Maria Valley	18,375	18,725
Montebello	17,250	16,475
Total California	597,250	595,750

SAN JOAQUIN VALLEY

Richfield Oil Corp. is making preparations to conduct a production test on its Wheeler Ridge wildcat that cored 64 ft. of good oil sand late last week and the productivity of this Eocene sand should be determined within the next few days. The sand has good porosity and permeability and the prospects of a new discovery appear quite favorable. The well that cored this oil sand, 2 Kern County Land, is the second well drilled in the Wheeler Ridge field by Richfield Oil Corp. The first wildcat in this district produced for about 2 weeks from two sands but failed to hold up and thus the importance of the find remains undetermined. The present well looks far better than its predecessor but its importance from a production standpoint will only be determined on an actual production test. Bottom of the hole is 10,934 ft. and 6⅝-in. casing has been cemented at 10,862 ft. There is a little gray sand near the bottom of the hole, but this may be a gas sand rather than a water sand. Richfield 2 Kern County Land is located in 28-11n-20w across a canyon from holdings of Standard Oil Co. in the old Wheeler Ridge field. A few miles north Kern Line Oil Co. is preparing to make a production test on its No. 1 well in 19-11n-19w. Bottom of the hole is at 8,261 ft. in a sandy shale formation.

Kettleman North Dome

Although Kettleman North Dome operators made a substantial contribution to curtailment by reducing crude-oil production approximately 10,000 bbl. per day during the past 60 days there is still another problem to solve. This is the method to be used in regulating production of the Avenal zone of Eocene age. Operators have held several meetings during the past 7 months, but at last reports were still undecided as to the best method to be used in curtailing production of this prolific zone. Two weeks ago, Standard Oil Co. and Union Oil Co. adopted a plan that they considered equitable and put it into effect. Both of these companies strictly adhered to their plan since it was put into effect and it now remains for other operators to either follow suit or submit a better program. Kenda proposed a plant late in December 1939 whereby the Huffman lease of Superior Oil Co. would become a master unit and all other sections throughout the field would be allowed to produce at approximately the same rate. This plan would have the effect of curtailing production of all other quarter sections in the field to that produced by Superior Oil Co. on its 160-acre Huffman lease. The principal drawback to this plan was the fact that as time went on Superior Oil Co. and others in the same category would be penalized. Kenda and Standard Oil Co., who own in fee or control through unification of activities could keep on drilling Eocene wells and under the plan would be allowed to produce prorata. Approximately 13,500 acres would be available for Kenda and Standard to develop by consistent drilling whereas Superior, Union, and R. S. Lytle would be restricted due to limited holdings. This plan submitted by Kenda was approved in principle by all operators except Superior and R. S. Lytle. The former objected to the plan and the latter did not have an Eocene well producing.

Coles Levee—Tupman

Richfield Oil Corp., despite reports to the contrary, has no intention of reducing the scope of its drilling activities in the Coles Levee and Tupman fields of Kern County and will continue with its program that contemplates the completion of 100 wells in about a year. During 1940 Richfield is expected to exceed its program of 50 wells so that during 1941 the company will not be obliged to finish 50 additional wells to achieve its objective. At the present time, Richfield is running 14 strings of tools in this district, of which about six or seven should be finished before the close of 1940. The budget to cover the cost of this development program was allocated earlier this year and a recent check indicated that the company was well ahead of schedule. All drilling is being done under contract with drilling contractors including Bell & Lofland, Taft Well Drilling Co., J. A. Mabee, Pike Drilling Co., and others.

SAN JOAQUIN VALLEY COMPLETIONS

Greeley Field

Superior 2 Moore 12-29s-25e
Flowed 1,560 bbl., 37.7-gravity, 0.1 per cent cut, 1,064,000 cu. ft. gas, 22/64-in. bean, pressures 1,350/1,500 lb., elev. 338 ft., T.D. 11,490 ft. in oil sand, 7-in. water string cemented 11,410 ft., 100 ft. 5⅝-in. liner landed 11,490 ft., 120-mesh perf. open to production 11,410-90 ft., 11,907 ft. 2½-in. tubing. Completed in Rio Bravo zone. Top Rio Bravo 11,404 ft., 52 days total elapsed drilling time. Kern County.

Union 76-27 Kern County Land 27-28s-25e
T.D. 11,576 ft. in barren gray sand, Rio Bravo and Vedder zones barren, P.B. 8,150 ft. Company started whipstocking hole to southwest in hope of intercepting oil sand. Redrilled to 8,035 ft., P.B. 1,402 ft. Abandoning. This well definitely sets outer limits of production to northeast. Kern County.

Tupman Field

Richfield 43-33-A Kern County Land 33-30s-25e
Flowed 2,078 bbl., 34.1-gravity, 1.5 per cent cut, 2,122,000 cu. ft. gas, two 96/64-in. beans, pressures 300/900 lb., elev. 314 ft., T.D. 9,190 ft. in Stevens sand, 8⅝-in. water string cemented 8,794 ft., 439 ft. 6⅝-in. liner landed 9,185 ft., perf. open to production 8,830-8,985 ft., 9,005-9,185 ft., 9,154 ft. 2½-in. tubing. N point 8,212 ft., top first Stevens 8,524 ft., 37 days total elapsed drilling time. Kern County.

Ten Section Field

Shell 23-29-A Kern County Land 29-30s-26e
Flowed 2,182 bbl., 34.4-gravity, 1.5 per cent cut, 1,863,000 cu. ft. gas, 64/64-in. bean, pressures 150/1,050 lb., elev. 332 ft., T.D. 8,235 ft., 4½-in. oil string landed 8,235 ft. and cemented through perf. 8,055 ft., perf. open to production 8,056-8,170 ft., 8,189-8,235 ft., 8,050 ft. 2-in. tubing. Completed in Stevens oil sand, top Stevens zone 7,816 ft., drilled by slim-hole method in 29 days total elapsed drilling time. Kern County.

Shell 36-29-A Kern County Land 29-30s-26e
Flowed 2,299 bbl., 34.6-gravity, 0.1 per cent cut, 3,864,000 cu. ft. gas, open line, pressures 175/1,630 lb., elev. 331 ft., T.D. 8,351 ft., P.B. 8,250 ft., 4½-in. oil string cemented 8,250 ft. and cemented through perf. 7,959 ft., perf. open to production 8,075-8,144 ft., 8,155-8,250 ft., 7,957 ft. 2-in. tubing. Completed in Stevens oil zone, N point 7,450 ft., top first Stevens oil sand 7,755 ft., bottomed in gray sand and P.B. to base of Stevens oil sand. Top grav sand 8,279 ft.; 39 days total elapsed drilling time. Kern County.

SAN JOAQUIN VALLEY OUTPOSTS

Coles Levee Field

Standard 20-8 Kern County Land 5-31s-25e
Drilling 7,676 ft. in sandy shale. Kern County.

Union 58-2 Kern County Land 2-31s-25e
Derrick erected 330 N, 330 E from S cor. 2-31s-25e. Kern County.

Elk Hills Field

Standard 42-31-S 31-30s-24e
Preparing to spud. Kern County.

Kettleman North Dome Field

Standard 344-13-H fee 13-21s-16e
Drilling hard Eocene sand and shale at 10,830 ft. in oil sand. Top McAdams sand cored 10,789 ft. Fresno County.

Standard 1-1-U fee 1-23s-16e
Drilling in hard shale 9,970 ft. Kings County.

Midway-Sunset Field

No. Amer. Oil Consd. 1-28 W.P. 28-32s-23e
T.D. 2,240 ft. Kern County.

Paloma Field

Western Gulf 12-12-B Kern County Land 12-32s-26e
Drilling sandy shale 8,638 ft. Kern County.

Rio Bravo Field

Union 72-28 Crites 28-28s-25e
Drilling Vedder oil sand at 11,480 ft., top Rio Bravo oil sand 11,238 ft. Running low structurally. Kern County.

Union 41-33 Pacific States 33-28s-25e
Rigging up and preparing to spud. Kern County.

Strand Field

Associated 25-7-E Kern County Land 7-30s-26e
Drilling at 10,594 ft. in hard sand and shale. Kern County.

Wasco Field

Pacific Western 1 Meyer 7-27s-24e
T.D. 13,150 ft., P.B. 13,035 ft., bridge 11,105 ft., drilled through 7-in. casing 10,968 ft., redrilled to 13,125 ft. and bottomed in shale, landed 2,500 ft. 4¾-in. blank liner and cemented 13,125 ft., will gun-perf., elev. 283 ft. Kern County.

Wheeler Ridge Field

Richfield 2 Kern County Land 28-11n-20w
T.D. 10,934 ft., cored 64 ft. of Eocene oil sand. Cemented 6⅝-in. water string 10,862 ft. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Panoche District

Jergins Trust 2 Cheney 29-14s-13e
Drilling 3,961 ft. in sand and shale, cemented 11¾-in. surface pipe 538 ft. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee 10-32s-24e
Drilling at 10,590 ft. in hard tight gray shale with streaks of sand and silt, giving no cuts. Kern County.

Potrero Hills District

Richfield 3 Potrero 10-4n-1w
Rigging up and preparing to spud. Brown Drilling Co. will drill well on contract basis. Solano County.

Pyramid Hills District

Associated 31 West Slope 20-24s-18e
T.D. 1,980 ft., drilling in Cretaceous shale, top Cretaceous 1,909 ft., now redrilling 1,914 ft., formation test 1,805-1,914 ft., ½-in. bean, open 1 hr., slight blow, recovered 80 ft. mud. Kings County.

Rio Bravo District

Wilshire 1 Campen 1-29s-25e
Drilling at 9,694 ft. in sandy shale. Kern County.

Rumsey Hills District

Standard 1 Tippetts 9-12n-3w
T.D. 2,550 ft. Yolo County.

Sacramento District

Ind. Expl. Co. 1 Unit Plan 19-7n-6e
Drilling 2,360 ft. in sand and shale. Sacramento County.

Tejon District

Richfield 1 Tejon Ranch 2-10s-19e
Drilling 8,840 ft. in gray sand and shale. Kern County.

Union Avenue District

Hancock Oil Co. 1 Roberts 6-30s-28e
Drilling at 3,694 ft. in sand and shale. Kern County.

Tracy District

Standard 1 Blewett 25-3s-6e
Rigging up and preparing to spud., elev. 62 ft. San Joaquin County.

LOS ANGELES BASIN

Fullerton Oil Co. got a surprise this week when No. 6 in 25-2s-11w came in on a preliminary test flowing 1,200,000 cu. ft. of gas per day with no oil or water in evidence. The crew did not suspect the presence of any such amount of gas during drilling operations although a few colors were noted at the point where the gas is entering the hole. This well is a wildcat drilled by Union Oil Co. and Fullerton Oil Co. as a joint undertaking with the latter doing the actual drilling. The hole was carried down to 6,006 ft. but was plugged back to 2,940 ft. when the lower part of the hole failed to show anything worth testing. The well will be given a conclusive production test and if it fails to produce oil it will be shut in. Present plans contemplate the starting of a second well in close proximity to the gasser. The subsurface formations in this locality are badly broken up with as many as three faults beneath each other. Because of this it is almost impossible to predetermine what should be found. This well is located in the Whittier-Sansinena district of Orange County.

Inglewood

Standard Oil Co. is expected to begin coring for the Bush zone in the Inglewood field of Los Angeles County within the next few days as the bit in 3-1 Los Angeles Investment is believed to be located just above the pay. This well is an offset to Bush 1 Sentous, which proved up the existence of a deeper productive zone in the Miocene a few months ago. Both wells are located far out structurally on the south flank of the Inglewood structure. The result of work is of primary importance because a good completion would probably precipitate aggressive drilling. No. 1 Sentous is at present only pumping about 110 bbl. daily and it is exceedingly questionable that Bush Oil Co. has another location that would justify the expenditure for drilling an additional well. Standard Oil Co., holding the Los Angeles Investment lease adjoining, is obliged to drill an offset under the terms of its lease. It is interesting to note that Standard Oil Co. at one time held this lease but quitclaimed it several years ago. When Bush completed No. 1 Sentous the company found it advisable to re-lease its old lease. A portion of the Los Angeles Investment lease was retained at the time the edge property was quitclaimed as it contains a number of upper-zone wells. Present indications point to the probability that the Inglewood field will undergo extensive development early in 1941. The only way this can be averted is to suspend production activities on 1 Sentous and make a deal with all landowners involved. This would establish a bad precedent but it would be cheaper in the long run as drilling costs will approximate several million dollars at a time when the oil is not needed.

LOS ANGELES BASIN COMPLETIONS

Aliso Canyon Field

Associated 24 Porter 27-3n-16w
Flowed 792 bbl., 22.3-gravity, 1.6 per cent cut, 450,000 cu. ft. gas, open to ½-in. bean, pressures 175/350 lb., elev. 2,175 ft., T.D. 5,365 ft. in Porter zone, 8⅝-in. water string cemented 4,990 ft., 792 ft. 6⅝-in. liner froze 5,323 ft. and cemented through perf. 4,953 ft., perf. open to production 4,951-5,323 ft., 4,866 ft. 3-in. tubing, 73 days total elapsed drilling time. Los Angeles County.

Huntington Beach

Signal 24 Bolsa 34-5s-11w
Flowed 720 bbl. on gas lift, 25.2-gravity, 2 per cent cut, 120,000 cu. ft. gas, 33/64-in. bean, pressures 220/660 lb., elev. 14 ft., T.D. 3,730 ft., 8⅝-in. water string cemented through perf. 1,008 ft., 3,400 ft., 351 ft. 6⅝-in. liner landed 3,730 ft., perf. open to production 3,400-3,730 ft., 3,713 ft., 2½-in. tubing, 13 days total elapsed drilling time. Orange County.

Southwest Expl. Co. 33 State 4-6s-11w
Flowed 1,970 bbl., 24-gravity, 1 per cent cut, 400,000 cu. ft. gas, 38/64-in. bean, pressures 250/400 lb., elev. 49 ft., T.D. 4,550 ft., 8⅝-in. water string cemented 4,074 ft., 508 ft. 6⅝-in. liner landed 4,550 ft., perf. open to production 4,072-4,550 ft., 4,220 ft. 2½-in. tubing. Completed in tideland accumulation beneath Pacific Ocean by directional drilling, 25 days total elapsed drilling time. Orange County.

Long Beach Field

Texas 11 Davidson 19-4s-12w
Pumped 135 bbl., 24.3-gravity, 30 per cent cut, elev. 110 ft., T.D. 3,306 ft. in Alamitos zone, 8⅝-in. oil string cemented through perf. 1,001 ft., 3,306 ft., gun-perf. open to production 3,285-3,300 ft., 3,193 ft. of 3-in. tubing, 13 days total elapsed drilling time. Los Angeles County.

Seal Beach Field

Continental 44 Bixby 11-5s-12w
Flowed 169 bbl., 26.8-gravity, 3.1 per cent cut, elev. 10 ft., T.D. 5,604 ft. in Selover zone, redrilled to 5,231 ft., 8⅝-in. water string cemented 4,576 ft., 470 ft. blank 6⅝-in. liner cemented 4,970 ft., 309 ft. of 5-in. liner landed 5,231 ft., perf. open to production 5,032-78 ft., 5,108-5,231 ft., 4,891 ft. 2½-in. tubing, 51 days total elapsed drilling time. Orange County.

Wilmington Field

Brain, Cooper & Haney 2 Harbor 33-4s-13w
Pumped 170 bbl., 14.3-gravity, 3 per cent cut, elev. 23 ft., T.D. 3,537 ft. in Ranger zone, 9⅝-in. water string cemented 2,597 ft., 966 ft. 5½-in. gravel-packed liner landed 3,536 ft., perf. open to production 2,597-2,766 ft., 2,811-3,056 ft., 3,146-3,536 ft., 3,526 ft. 2½-in. tubing. Located at Eubank & E Streets. 15 days total elapsed drilling time. Los Angeles County.

Hogan Pet. 3 Graham 28-4s-13w
Pumped 90 bbl., 16.3-gravity, 0.4 per cent cut, elev. 15 ft., T.D. 3,135 ft. in Ranger zone, 8⅝-in. water string cemented 2,770 ft., 378 ft. 3½-in. gravel-packed liner landed 3,135 ft., perf. open to production 2,879-3,132 ft., 2,738 ft. 2½-in. tubing. Cleaned out and gravel-packed liner run in hole. Los Angeles County.

Seashore Oil Co. 5 Gremac 4-5s-13w

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Flowed 295 bbl., 15.6-gravity, 7 per cent cut, 50,000 cu. ft. gas, 14/64-in. bean, elev. 15 ft., T.D. 3,752 ft. in Ranger zone, 8⅝-in. water string cemented 2,996 ft., 805 ft. 5¾-in. liner landed 3,745 ft., perf. open to production 3,000-3,210 ft., 3,480-3,670 ft., 3,690-3,745 ft., 3,725 ft. 3-in. tubing including 861 ft. of 2½-in. and with packer 2,864 ft. The 5¾-in. liner included 785 ft. of 7¼-in. in o.d. gravel-packed liner. 19 days total elapsed drilling time. Los Angeles County.

Selegna Pet. Corp. 6 Harbor 33-4s-13w
Pumped 85 bbl., 14.5-gravity, 2 per cent cut, elev. 15 ft., T.D. 3,530 ft. in Ranger zone, redrilled 3,290 ft., 8⅝-in. water string cemented 3,032 ft., 310 ft. 5½-in. gravel-packed liner landed 3,288 ft., perf. open to production 3,010-3,288 ft., 2,890 ft., 2½-in. tubing. Los Angeles County

LOS ANGELES BASIN OUTPOSTS

Dominguez Field

Union 79 Callender 32-3s-13w
Drilling 10,160 ft. Los Angeles County.

Long Beach Field

Union 19 L.B.C. 30-4s-12w
Drilling sand and shale 6,998 ft. Los Angeles County.

LOS ANGELES BASIN WILDCATS

Inglewood District

Standard 3-1 L.A.I. 17-2s-14w
Drilling at 7,792 ft. in hard sandy shale. Los Angeles County.

Pico District

Cal-Pico 1 Pico 7-2s-11w
T.D. 7,787 ft. in gray sand and shale. Will P.B. and test showing 6,200 ft. Los Angeles County.

Whittier District

Fullerton 6 Whittier 25-2s-11w
T.D. 6,006 ft., P.B. 2,940 ft., 8⅝-in. casing cemented 2,190 ft. Will make production test. Joint test with Union Oil Co. Los Angeles County.

COASTAL DISTRICT

The extreme depths to which operators must now go for production in many of the fields throughout the state has had a tendency to freeze out many independent operators who are unable to invest the large sum necessary to prosecute work with the result that many independent operators have returned to Ventura and Santa Barbara counties where production is secured at normal depths. As a consequence wildcat exploration in potentially productive areas and exploitation work in proved fields in Ventura and Santa Barbara counties has shown a substantial gain during the past year. Many operators feel that deep drilling involving depths below 8,000 ft. is uneconomic under present conditions due to the small top allowable which for the month of December 1940 is 149 bbl. daily. With these deep wells costing on an average of about $125,000 and on the basis of $1 oil it is quite obvious that it will take several years to pay out under the most efficient methods. What will happen after the period of flush production is over and operators are faced with the problem of securing production by artificial means remains to be determined. The fact that many properties in the San Joaquin Valley where operators are going to depths ranging from 8,200 ft. to 13,000 ft. call for royalties of 25 per cent on some properties to 50 per cent of the profits on others will possibly result in premature abandonment due to the narrow margin. A royalty of 25 per cent is bad enough on a comparatively shallow well and with present equipment it seems almost prohibitive as far as deep wells are concerned.

Carbon Dioxide

Down in Imperial Valley in close proximity to the great Salton Sea of California, Venice Oil & Refining Co. has completed another good gas well producing almost pure carbon dioxide at the rate of about 1,000,000 cu. ft. per day. Venice Oil & Refining Co. started its operations several years ago in the Playa Del Rey field of Los Angeles Basin where it completed several good wells that produced at a good rate for some time. Within the past year or so the company became interested in carbon dioxide gas in the Brawley area east and slightly north of San Diego. The area in which this gas is produced is the lowest point on the American continent being over 200 ft. below sea level. A carbon-dioxide plant was erected several years ago and operated at varying rates from gas produced on adjacent property. The product, dry ice, has been used in refrigerator cars handling Imperial Valley produce and some was sold locally in Los Angeles and San Diego for domestic consumption. Details of this installation and the method of handling the carbon-dioxide gas appeared in The Oil and Gas Journal issue of September 17, 1936.

COASTAL DISTRICT COMPLETIONS

Rincon Field

C. C. M. O. Co. 38-B Hobson 17-3n-24w
Flowed 310 bbl., 30.1-gravity, 0.6 per cent cut, 304,000 cu. ft. gas, 28/64-in. bean, Tubing pressure 175 lb. Elevation 289 ft. T.D. 3,907 ft. 7-in. oil string cemented 3,885 ft., gun perf. 3,237-78 ft., 3,590-3,650 ft. 625 ft. 4¾-in. gravel-packed liner landed 3,840 ft. Perf. open to production 3,218-80 ft., 3,575-3,729 ft. 3,193 ft. 2½-in. tubing with packer 3,154 ft. Completed in first and second Hobson zones. 33 days total elapsed drilling time. Ventura County.

(Continued on Page 76)

Kansas Fields

(Continued from Page 69)

Trapp pool: Cities Service 8-A Bitter, NL SE NW 5-16-13w, 2,054 bbl., Arbuckle 3,346-59 ft., T.D. 2,000 gal. acid.
Cities Service 4 Stoskopf, S½ SW NW 17-16-13w, pumped 410 bbl., Arbuckle 3,399-3,410 ft., T.D.

Barber County

Wildcat: Barbara Oil 1-A Angell, C NE SE 10-33-14w, dry, T.D. 5,291 ft., Mississippi lime 4,689 ft., base Mississippi 4,981 ft., Misener 5,048 ft., Viola 5,058 ft., Simpson sand 5,212 ft., Arbuckle 5,290 ft.

Butler County

Young pool: Adair & Morton 1-A Dunne, EL SE NW 23-26-7, dry, T.D. 2,796 ft., Kansas City 2,070 ft. Mississippi lime 2,764 ft., pumped 10 bbl. oil and 115 bbl. water at T.D.
Leon pool: Cromwell et al 6 Schriver, NE NE SE 33-27-6, pumped 25 bbl., Viola 3,093-95 ft., 500 gal. acid.
Boline et al 1-A Parsley, wildcat, NW NW NE 23-25-4, dry, T.D. 1,444 ft., sand.

Cowley County

David area: Derby 4 David, NW SE NE 2-31-4, pumped 60 bbl., Bartlesville 2,955-70 ft., T.D. 2,972 ft.

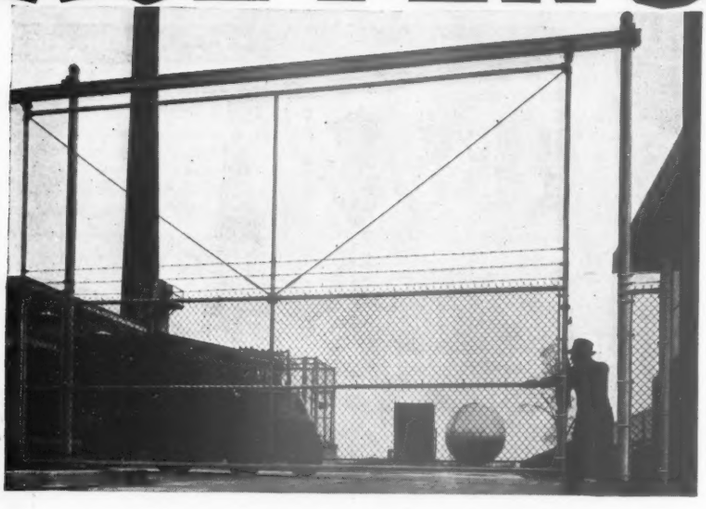
Douglas County

Wildcat: S. W. Forrester et al 1 Altenbernd, C S½ S½ NW 35-12-20, dry, T.D. 1,605 ft., Mississippi lime 1,104 ft., base Mississippi 1,507 ft., Hunton 1,564 ft.
Wildcat: Douglas County O. & G. 2 Gage, NE NE SE 11-13-20, dry, T.D. 1,120 ft., Squirrel sand 648 ft., Mississippi lime 1,102 ft., 1,000,000 cu. ft. gas at 685 ft.
Wildcat: Forrester et al 1 Ice, SW SE SE 9-14-19, dry, T.D. 940 ft., Squirrel sand 930 ft.

Ellsworth County

Stoltenberg pool: Jayhawk Oil 2 Haska, W½ SW SE

PAGE FENCE



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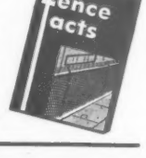

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5-16-10w, pumped 536 bbl., Arbuckle 3,314-29 ft., T.D. 2,000 gal. acid.
Atlantic Ref. 4-A Stoltenberg, NL SE SE 27-16-10w, swabbed 60 bbl. in 1-hr. test, Arbuckle 3,289-3,301 ft., T.D.
Aylward Prod. 2 Ehler, NE SE SW 35-16-10w, 3,000 bbl., Arbuckle 3,279 ft., T.D.

Ellis County

Bemis pool: Champlin Ref. 4-D Hadley, NL SE SW 17-11-17w, 3,000 bbl., Arbuckle 3,374-91 ft., T.D. 3,435 ft.
Cities Service 6 McCord, NW NW SE 26-11-17w, 2,538 bbl., Arbuckle 3,548-64 ft., T.D.
Marshall pool: Lario O. & G. 9 Marshall, C NE SE 36-11-18w, swabbed 80 bbl. an hr., Arbuckle 3,616-21 ft., T.D.

Greenwood County

Severy pool: Bay Pet. 3 Adams, SE SW NE 17-28-11, pumped 224 bbl., Kansas City 1,224-26 ft., T.D.
Reed 3 Blevins, SW SE NE 17-28-11, pumped 25 bbl., Kansas City 1,218-31 ft., T.D.

Marion County

Lost Springs pool: Lorieaux & Harrington 5 Forsberg, SW cor. 21-17-4, pumped 169 bbl., Mississippi lime 2,384-2,439 ft., T.D.
Ward McGinnis 2 Neuwirth, SW NW NW 29-17-4, dry, T.D. 2,620 ft., Mississippi lime 2,438 ft.

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Dec. 7	Nov. 30
Burrton	7,300	7,350
Ritz-Canton	3,850	3,800
Graber	2,300	2,250
Hollow-Nikkel	1,450	1,450
Voshell	1,850	1,850
Wellington	1,550	1,600
Lorraine	1,000	1,150
Stoltenberg-Wilkins	2,720	4,915
Bloomer	3,600	5,050
Chase	3,900	4,100
Geneseo	3,300	4,250
Silica	16,500	18,450
Keesling	400	1,050
Wherry	2,950	3,150
Trapp district	14,000	15,200
Balance Russell County	17,000	19,850
Sedgwick County	3,200	3,200
Bemis	7,600	8,450
Burnett	5,200	5,150
Kingman County	535	650
Stafford County	10,605	11,380
Greenwood County	8,150	8,100
El Dorado	7,200	7,000
Total Kansas	183,100	196,650

McPherson County

Bornholdt pool: Tulsa Oil 4 Nelson, N½ NW NE 19-20-5w, 10 bbl. an hr., Mississippi lime 3,322-27 ft., 3,330-35 ft., T.D. 3,351 ft.
Roxbury pool: Westgate-Greenland 2 Reese, C S½ NW NW 19-17-1w, pumped 2,098 bbl., Mississippi 2,700-11 ft., T.D. 2,000 gal. acid.
Williams et al 1 Henne, wildcat, SW SW NE 21-17-1w, pumped 495 bbl. 36 gr., Mississippi lime 2,658-61 ft., T.D. 2,000 gal. acid.

Pratt County

Cunningham pool: Skelly 6 Maxdeon, EL NE SE 25-27-11w, pumped 464 bbl., Lansing 3,399-3,462 ft., T.D.
Skelly 1 Annetta, SE NW SE 1-28-11w, 42,000,000 cu. ft. gas, Viola 4,208-29 ft., T.D.
Skelly 1-B Armistead, NW SW NW 2-28-11w, 14,000,000 cu. ft. gas, Viola 4,162-83 ft., T.D.

Pawnee County

Pawnee Rock pool: Stanolind 2 Belt, WL NE SW 13-20-16w, pumped and flowed 1,402 bbl., Arbuckle 3,846-53 ft., T.D. 3,864 ft.

Rice County

Bornholdt pool: Barnsdall 1-A Wernet, S½ SE NE 12-20-6w, dry, T.D. 3,408 ft., Mississippi lime 3,343 ft.
Keesling pool: Colorado Pet. 1-A Keesling, EL SE NW 10-20-9w, pumped 413 bbl., Arbuckle 3,222-25 ft., T.D. 3,237 ft.
Wellman pool: D. T. Ingling 1 Small, C SW NW 22-21-9w, 11,707,000 cu. ft. gas, Misener 3,309 ft., T.D. 3,472 ft.

Russell County

Mahoney pool: Jones Bros. 3 Mahoney, S½ NW SW 8-14-12w, dry, T.D. 3,017 ft., Lansing 2,999 ft.
Hall-Gurney pool: Central Pet. 5 Boxberger, SL NE SE 26-14-14w, 3,000 bbl., Lansing 2,917-22 ft., 2,934-42 ft., 2,995-3,000 ft., T.D. 3,001 ft.
Dean Landon 4 Boxberger, NE NW SE 26-14-14w, pumped and flowed 3,134 bbl., T.D. 3,000 ft.
Harry Gore 2 Michel, EL SE NW 36-14-14w, pumped 2,014 bbl., Gorham sand 3,158-63 ft., T.D.
Gorham pool: Cities Service 1 Millberger, W½ NW NE 13-14-15w, pumped 375 bbl., Lansing 3,030-59 ft., 3,074-83 ft., T.D. 3,265 ft.
Neidenthal pool: Sherman et al 1 Neidenthal, E½ NW NW 3-14-15w, old well drilled to 3,071 ft., T.D., completed for old potential 1,449 bbl., Lansing 3,069-68 ft.

Stafford County

Zenith pool: Magnolia 2 Tretbar, NE SE SE 12-24-11w, flowed 668 bbl. through tubing, Viola and Misener 3,726-76 ft., T.D.
Winkler-Koch 2 Equitable, W½ SE NE 15-24-11w, flowed 50 bbl. an hr., Viola 3,807-22 ft., T.D.
Stanolind 2 Charles, E½ NW SE 15-24-12w, flowed 20 bbl. an hr., Viola 3,800-35 ft., T.D.
Phillips 1 Tretbar, S½ SE NW 12-24-11w, old well deepened to Viola 3,737-91 ft., T.D. 3,000 bbl., 3,000 gal. acid.
Stanolind 5 McComb, S½ SW NW 12-24-11w, old well deepened to Viola 3,743-83 ft., T.D., flowed 13 bbl. an hr.
Bedford pool: Shell 2 Bean, NW SE SW 21-23-12w, pumped 261 bbl. oil and 2,739 bbl. water, Arbuckle 3,848-57 ft., T.D. 3,875 ft.

KANSAS DRILLING REPORT

Barton County

Continental 1 Karst ..... NW NE NW 12-16-15w
Topeka 2,860 ft., drilling 3,034 ft.
Owens et al Burmeister ..... C S½ SE NW 20-17-11w
Sooy 3,410 ft., Arbuckle 3,441-66 ft., T.D., no shows.
Allen et al Benjamin ..... C W½ SW SE 3-9-13w
Ft. Riley 1,830 ft., drilling 2,850 ft.

Cowley County

Earl Wakefield 1 Durham ..... C W½ NW SE 34-30-3
Kansas City 2,437 ft., drilling 2,525 ft.

Ellis County

Stearns Drlg. 1 Witt ..... C S½ NE SW 28-12-16w
Underreaming 8-in. 2,830 ft.
Central Pet. 1 Wellbrock ..... NW NW NE 32-14-16w
Drilling 1,228 ft.

Greenwood County

Ward McGinnis 1 Sharp ..... C SW SW 9-28-11
Base Mississippi 1,905 ft., Arbuckle 1,936-38 ft., T.D., show oil.

Jefferson County

McCain et al 1 Green ..... SW SW NW 9-11-19
Drilling 745 ft.
Caufield & Sullivan 1 Ragan ..... SW SW SE 19-10-20
Drilling 460 ft.

Leavenworth County

McLaughlin & Sons 1 Thorp ..... C NE NE 27-10-20
Show oil and gas 1,359 ft., drilling 1,376 ft.

Ness County

Aladdin Pet. 1 Jedlicka ..... C NE NE 33-20-23w
Fishing 3,564 ft.

Pottawatomie County

Olson & McCole 1 Anderson ..... NW SW NW 1-8-7
T.D. 1,105 ft., S.D.

Rice County

R. E. Hess et al 1 Cole ..... SE SE NE 31-20-6w
Mississippi lime 3,415 ft., show oil 3,440 ft., T.D.

Rooks County

Cities Service 1 Johnston ..... SW SW NE 5-6-19w
Fishing 3,589 ft.

Russell County

Pryor & Lockhart 1 Borrell ..... C N½ NE SE 3-15-11w
Lansing 2,866 ft., fishing 3,152 ft.
Braden & McClure 1 Phillip ..... C N½ NW SE 34-15-11w
Lansing 2,977 ft., drilling 3,050 ft.

Rush County

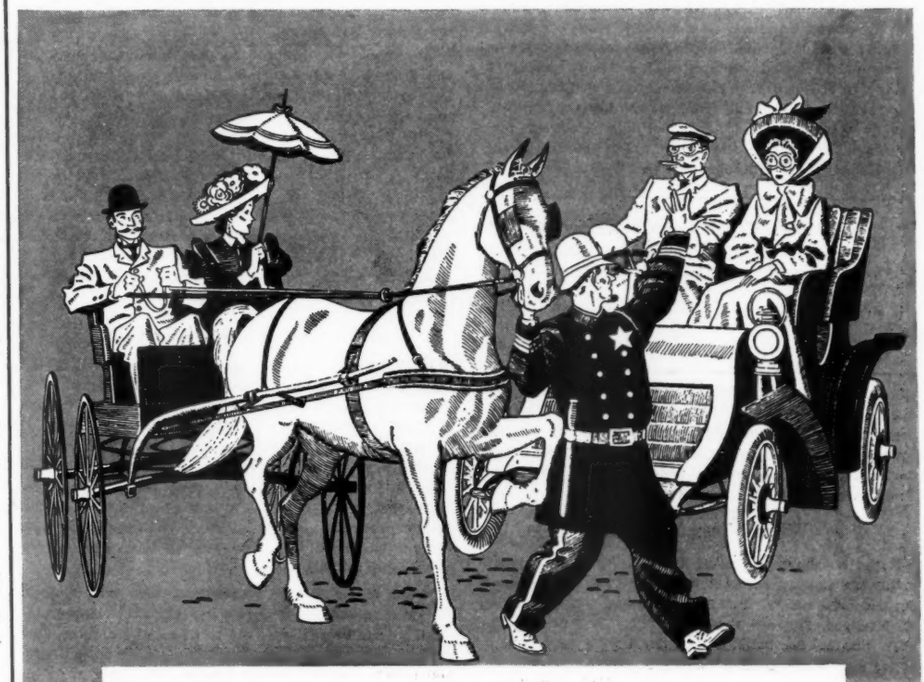
Patton Drlg. 1 Werth ..... C W½ SW SE 10-16-19w
Drilling 1,400 ft.

Stafford County

Zephyr Drlg. 1 Moon ..... C S½ SE NW 30-22-13w
Drilling 2,350 ft.

Thomas County

Billings 1-A Ryan ..... C E½ NE SE 27-8-32w
T.D. 3,620 ft., rigging up standard tools.



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By
NEIL WILLIAMS

Crude Found in New Sand on Red Fish Reef, Galveston Bay

HOUSTON, Tex. Dec. 9.—A new sand logged in an outpost well a mile northwest of the discovery well of the Red Fish Reef field, offshore from Chambers County in Galveston Bay, converted this gas-distillate field into an oil field and an increase in development is anticipated. The extension was made by the completion of Humble 3-A-248 State which flowed at the rate of 8 bbl. of 35.6-gravity oil per hour through a ¼-in. choke from perforated casing at 10,327-43 ft. Tubing pressure was 725 lb. This is the third well to be completed on the structure which was opened in August with the completion of the company's 1-A-247 State which flowed gas and distillate from perforated casing at 8,814-16 ft. The second well drilled, located in tract No. 247, about 1,100 ft. southeast of the discovery was completed as a distillate producer in a new sand section in the Frio at 9,441-55 ft. In this immediate area, Humble has three rigs located in tracts Nos. 264, 223 and 263, while in the newly opened Fisher's Reef field, approximately 7 miles to the north, 5-C-45 State, 3,300 ft. southeast of the discovery well is drilling in shale below 7,202 ft., while northwest of the discovery well Standard Oil Co. of Texas is driving piling for 1-47 State.

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
Oil wells: Fields	17	5,540	108,166
Dry holes: Fields	1	.....	3,660
Dry holes: Wildcats	1	.....	9,560
Total	19	.....	121,386

Wilcox Trend Activity

Reported showings of oil and gas in a Wilcox test in Lavaca County resulted in considerable interest being centered on M. McMurray 1 Allen, located in the M. Muidoon Survey, about 10 miles east of Halletsville. Top of the hard Wilcox sand with no show of oil or gas was logged at 8,413 ft., and at 8,460-62 ft. porous sand was recovered with a slight gas taste. Sand with an oil odor and light cut in ether was recovered at 9,493-8,511 ft., and the operator was preparing to core ahead from a total depth of 8,516 ft. in sand with a salty taste. An electrical survey was scheduled to be run the first of the week.

Operators interested in the Wilcox trend continue to watch the progress of Shell 3 Plow Realty Co., about 1,500 ft. northeast of the discovery well of the Sheridan field, which is coring in sand below 8,968 ft. This well logged the 8,200-ft. discovery pay, and is being drilled deeper as an exploratory test for possible production from deeper sands in the Wilcox zone. Several broken sand and shale sections have been cored, and drill-stem tests that have been made in the deeper section, have tested several pounds of working pressure and some distillate, but no recovery of oil has been reported.

In the Cold Springs area, San Jacinto County, drilling was scheduled to get under way on another Wilcox test as McDannald Oil Co. prepared to spud 1 U. S. A.-Foster Lumber Co., located in the George Taylor Survey, 3½ miles southeast of Cold Springs. The well is about 2 miles east of the company's 1 Coline, recently abandoned at 8,010 ft.

Rowan Field Extended

The Rowan field was extended a slight distance to the northwest as Humble Oil & Refining Co. completed 2 Hubbard. Drilled to a total depth of 8,541 ft., 5½-in. casing was cemented at 8,529 ft., and on a 14-hour potential test, flowing through a ⅛-in. choke, the well flowed 81 bbl. Tubing pressure was 1,775 lb., and shutin casing pressure 1,800 lb. East of Stanolind 1 Hodnett, the company's 1 Burgess, is drilling in shale below 7,949 ft. The Round Marginulina was topped at 7,360 ft., and the Flat Marginulina at 7,490 ft.

Location for a deep test on the Markham dome, Matagorda County was announced by Continental Oil Co. for 1 C. H. Biorne Trustee, located about ½-mile east of production in the I.&G.N. Survey No. 5. In the Sugar Valley area, another interesting wildcat test was marked off the list as Ohio 1 Blackburn was abandoned at 9,506 ft. This well is credited with having logged several interesting showings and additional development is expected.

Another deep producer for the northwest flank of the Fannett field, Jefferson County was indicated as Gulf 3-E Marrs-McLean, cored sand 8,314-45 ft., the total depth, and 5½-in. casing was cemented at 8,335 ft. In the same county and located in the LaBelle field, Sun 8 Broussard and Hebert, is bottomed at 7,450 ft., and the well is being tested through perforated casing at 6,546-27 ft. This well is located as a west offset to the company's 3 Broussard and Hebert, a gas and distillate producer, and is a northeast offset to the company's 7 Broussard, recently completed in the same sand section to open the first oil production on the structure.

Esperson Deep Sand Extended

An extension to the deep sand on the southeast flank of the Esperson field, Liberty County was recorded as General Crude Oil Co. completed 1 Zaruba in sand at 6,967-7,030 ft. This well is east of W. P. Luse 1 Hlavaty, recently completed to extend production several hundred feet north. Of the many new sands opened in the district during the year, the development at Esperson resulting from this new discovery ranks as one of the most important, and several million barrels in new reserves have been added to this old salt structure.

In the Gillock area of the Dickinson field, Galveston County, and located about 3,500 ft. southwest of production, Pure Oil Co. was testing 1-B Kohfeldt. The well was drilled to a total depth of 8,755 ft., and the well is being tested through perforated casing at 8,695-8,705 ft. where an electrical survey showed favorable indications.

Location for another well was made in the Blessing area, Matagorda County by Texas Co. for 1 E. M. Tyson, located about 4,700 ft. northeast of the discovery well in the J. E. Pierce Survey No. 2, Section 40.

Approximately 3 miles southeast of the Alta Loma field, location for a 9,500-ft. wildcat was announced by Strake Petroleum Co., Inc., for Lena Griffith in the H. P. Cayce Survey.

Ogburn Field Test

On the extreme north side of the Ogburn field, Harris County, L. M. Josey 1 fee is reported to have recovered several hundred feet of pipe-line oil on a drill-stem test through perforated casing at 6,449-50 ft., and a production test is being made. This well has been in the process of completion ofr several weeks, and drill-stem testing in several sands from 6,400 to 7,000 ft. recovered gas, distillate and salt water. In the southern part of the field, and south of the discovery well. Joyce Richardson et al 1-A Backen is bottomed at 7,215 ft., and 5½-in. casing was cemented at 7,039 ft. A 12-minute drill-stem test at 6,931-39 ft. tested 750 lb. working pressure and 12 gal. of distillate, while two other tests at 7,021-31 ft., and 7,149-65 ft., recovered distillate and salt water. Drill-stem testing in a new sand section at 6,449-59 ft., and 6,459-67 ft. recovered several hundred feet of oil and salt water.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Manvel field: Texas Co. 36 Houston Oil Field Asso., 507 bbl., ¼-in. choke, top sand 5,634 ft., T.D. 5,690 ft.

Old Ocean field: Stanolind 1 Love-Chenault et al, 423 bbl., ¼-in. choke, perf. casing 10,129-33 ft., T.D. 10,885 ft.

Rowan field: Humble 2 Hubbard, 81 bbl., 12 hr., ⅛-in. choke, sand 8,530-41 ft., T.D.

Chambers County

Anahuac field: Humble 4 Boyt, 576 bbl., ¼-in. choke, T.D. 7,075 ft.

Humble 9 Broussard-Hebert, 660 bbl., ¼-in. choke, top sand 7,196 ft., T.D. 7,231 ft.

Galveston County

Alta Loma field: Stanolind 1 J. A. Hulen, 485 bbl. fluid, 57 per cent oil, 43 per cent salt water, ⅛-in. choke, perf. casing 9,181-84 ft., T.D. 9,197 ft.

Hardin County

Saratoga field: H. L. Lewis 1-A Hopkins, 37 bbl. oil and 257 bbl. water, pumping, top sand 710 ft., T.D. 745 ft.

Harris County

Clear Lake field: Humble 58-C West, 145 bbl., ⅛-in. choke, top sand 5,899 ft., T.D. 5,905 ft.

Dyersdale field: H. C. Cockburn 4 Burkett, 366 bbl., ¼-in. choke, perf. casing 4,050-68 ft., T.D. 4,120 ft.

H. C. Cockburn 5 Burkett, 416 bbl., ¼-in. choke, perf. casing 4,061-74 ft., T.D. 4,120 ft.

H. C. Cockburn 10 Burkett, 414 bbl., ¼-in. choke, perf. casing 4,069-79 ft., T.D. 4,099 ft.

Fairbanks field: Stanolind 10 Jahnke, 142 bbl., ⅛-in. choke, top sand 6,800 ft., T.D. 6,840 ft.

Humble field: Texas 42 Koehler, dry, T.D. 3,660 ft.

Jefferson County

Lovells Lake field: Humble 17 Jefferson Land Co., 182 bbl., ⅛-in. choke, top sand 7,781 ft., T.D. 7,792 ft.

Liberty County

Esperson field: General Crude 1 Zaruba, 397 bbl. 12 hr., ¼-in. choke, sand 6,967-7,030 ft., T.D. 7,139 ft.

Matagorda County

Wildcat: Ohio 1 Blackburn, dry, T.D. 9,506 ft.

Tyler County

Joe's Lake field: Republic 47 fee, 408 bbl., ¼-in. choke, top sand 7,658 ft., T.D. 7,705 ft.

Wharton County

Magnet field: Humble 29 Cockburn, 89 bbl., ⅛-in. choke, top sand 5,539 ft., T.D. 5,541 ft.

Withers field: Texas 65-B Pierce, 112 bbl., ⅛-in. choke, T.D. 5,547 ft.

TEXAS GULF COAST DRILLING REPORT

Brazoria County

Phillips 1 Houston Farm Development Co., Chocolate Bayou field, 9⅝-in. casing 9,966 ft., T.D. 10,006 ft., drilling plug.

Phillips 1 Triangle Development Co., Chocolate Bayou field, coring shale 10,527 ft.

Hardin County

W. G. Christian 1 Gueydry, 6 mi. SE of Batson, M. Chavans Sur., S.D. 5,342 ft.

Montgomery County

Superior 1 T. A. McWhorter, 7 mi. E of Magnolia, T. J. Nichols Sur., S.D. 8,178 ft. high water.

Washington County

John A. Deering 1 H. C. Buck, James Lynch Sur., rigged up and S.D.

Wharton County

Texas 1 Wyer, W. F. Dobbins Sur., drilling shale 2,830 ft.

California Fields

(Continued from Page 74)

COASTAL DISTRICT WILDCATS

Huasna District

Harvey Oil Corp. 1 Huasna 11-32s-14e
Drilling 4,375 ft. in volcanic flow. Formation test at 3,712-3,881 ft. open 2 hr. Good blow. Recovered 1,800 ft. gassy oily mud. 900 lb. bottom-hole pressure. Formation test 3,880-4,100 ft. open 3 hr. recovered 1,000 ft. gassy mud. Formation test 4,135-60 ft. open 2 hr. recovered 50 ft. oily gassy mud. San Luis Obispo County.

Shiells Canyon District

Field, O. C., 3-B Calumet 3-3n-19w
T.D. 2,887 ft. 13⅜-in. surface pipe cemented 280 ft. 9-in. casing cemented 2,554 ft. Pumping test under way. Sanded up. Cleaning out. Ventura County.

Ventura Avenue District

Lloyd Corp. 5 Lloyd 24-4s-23w
T.D. 10,475 ft. in oil sand. Perf. 8,526-8,630 ft., 8,650-90 ft. Formation test open 4 hr. flowed 10 bbl. per hr. and died. Shot 4 holes at 9,868-70 ft. Tested dry. Cleaned out to 10,475 ft. On formation test with packer 9,034 ft., open 7½ hr., recovered 75 stands mud, little oil and gas. Now gun perf. above 10,440 ft. Ventura County.

By R. MARNE SANFORD

Silurian Lime Pay Productive Near Shipley, Ward County

MIDLAND, Tex., Dec. 9.—Another producing formation was found in West Texas last week in Ward County when a deep well was brought in from a formation definitely identified as Silurian in age. This is the first field in Texas to produce from rocks of this age and one of the few in the United States.

The discovery well was the long active yet "tight" operation, Gulf 5 Wristen Brothers, a wildcat located in the southeast part of Ward County near the Shipley field. The original total depth of the test was 7,075 ft. in the Ellenburger or Ordovician lime. The hole was plugged back and 7-in. casing was cemented at 6,968 ft., after which the plug was drilled out and tubing run to 7,073 ft. This was to test the Silurian section which had previously shown oil from 7,018 to 7,060 ft. Swabbing through tubing, the well kicked off to flow 2 bbl. of fluid hourly. The hole is open from casing seat at 6,968 ft. to top of cement plug at 7,075 ft.

On various size chokes and for various length gages during the middle of the week, the well averaged about 70 bbl. daily, flowing. Toward the end of the week the section was acidized with 3,000 gal. The first hour's flow following acid returned 30 bbl. of fluid, the second hour returned 25 bbl. and the third 20 bbl. The test is also showing about 2,000,000 cu. ft. of gas daily. This prospective deep discovery is located 2,310 ft. from the northwest and southwest lines of Section 18, Block 5, H.&T.C. Survey, southeast of the Shipley field.

It is reported that the top of the Silurian section was found at 6,920 ft. or 4,419 ft. below sea level. This would place the elevation of the test at 2,501 ft. above sea level. The character of the pay section has not been officially reported, however, since it was acidized and not shot it is concluded that it must be lime or mainly lime. This fact would tend to indicate that the pay is the Fusselman limestone which is known to outcrop at several points throughout the mountains of far west Texas. It is not known whether any of the rocks known to exist on outcrop between the base of the Permian and the top of the Silurian were encountered. However, from correlations between the base of the Permian in the two north Pecos County Ordovician fields it may be concluded that there is sufficient hole unaccounted for to warrant the conclusion that both the Mississippian and the Devonian were found and possibly the Pennsylvanian. The Pennsylvanian lime, a crinoidal member in the Strawn series, is producing in the recently opened Todd deep field of Crockett County about 80 miles southeast of the new discovery. The Mississippian lime has been reported in wildcats in the extreme northeastern part of the Permian basin, but whether it is present in the southern part is still not known.

SUMMARY OF COMPLETIONS

	No.	Prod.*	Footage
Northern West Texas			
Oil wells: Slaughter-Duggan	5	2,728	25,132
Wasson	3	2,689	15,698
Seminole	2	1,550	10,475
Dry holes: Wasson area	1	.....	5,515
Wildcats	1	.....	5,013
Total	12	.....	61,833
Recompletions: Wasson	3	4,127	.....
Southern West Texas			
Oil wells: Ector County fields	8	7,782	33,773
Other fields	4	717	9,248
Dry holes: Ector County fields	1	.....	4,220
Other fields	2	.....	6,726
Total	15	.....	53,967
Recompletions: McCamey	2	323	.....
Texas Panhandle			
Oil wells: Pampa	3	209	9,228
Borger	5	1,824	15,218
Other fields	3	368	9,265
Total	11	.....	33,711
Southeast New Mexico			
Oil wells: Fields	5	857	19,619

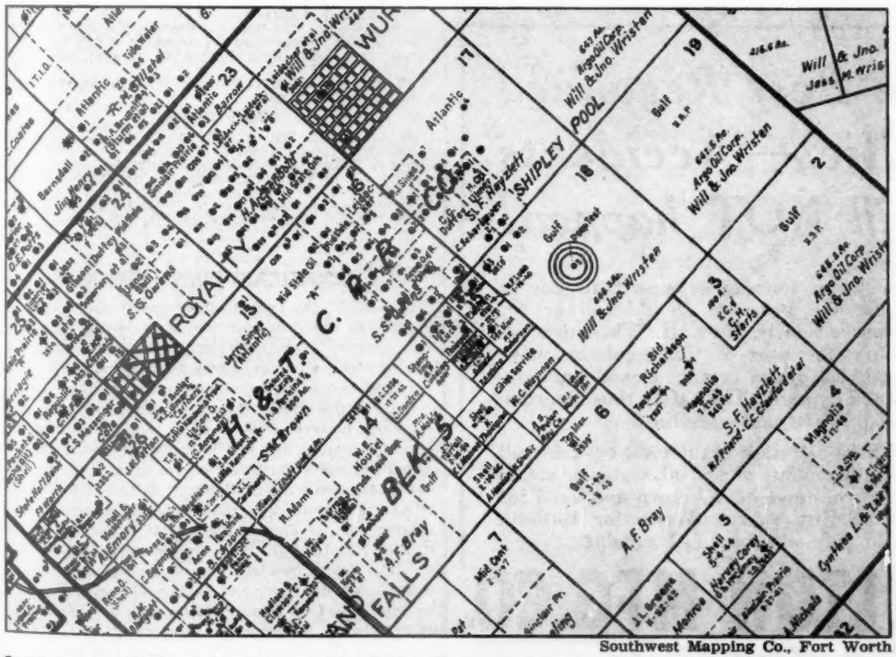
*Barrels.

Crane Ordovician Area Extended

The new Ordovician producing area just south of the Tubb field and southeast of the old Sand Hills (Ordovician) field in Crane County was extended the past week. It was Humble 46-X Tubb, SE SW NE Section 11, Block 27-B, P.S.L. Survey, about ½ mile north of the American Liberty 1-A Tubb which extended the field about ½-mile to the northwest several months ago. The new well is standing, untested, at a total depth of 5,794 ft. with casing cemented at 5,766 ft. The Ellenburger lime was topped at 5,762 ft. and saturation was encountered at 5,780 ft. The picked top of the Ellenburger lime checks the well about 20 ft. lower, structurally, than the American Liberty extension to the south, however, still about 9 ft. higher than the Gulf 1 Tubb, discovery well for the area. This new Ordovician spot is about 3 miles southeast of the old Sand Hills field, Ordovician production.

Abell Field Outpost Location

The new Abell field producing from the Ordovician and discovered only a few weeks ago by the Taubert-McKee-Siemoneit Drilling Co. has been given a new 1¼-mile outpost location by Magnolia to total two tests recently staked in the area by the Magnolia company. The new operation is 1 State-Sharp, 467 ft. from the south and east lines of Lot 9, Section 22, Block 9, H.&G.N. Survey. Lot 9 is the southeast corner of the section, placing the test 1¼ miles northwest of the discovery well and only ¾ mile west of the old Magnolia and Tex-Mex 1-A McKee, an Ordovician failure in 1938.



Southwest Mapping Co., Fort Worth

Opening of the Silurian field in Texas is the Gulf 5 Wristen Brothers, just east of the Shipley field in Ward County, West Texas. The well has registered flows of 30 bbl. hourly from the new and deep pay from 7,018-60 ft. Geological information on the test is being withheld by the company

SOUTHERN WEST TEXAS COMPLETIONS

Ector County

Goldsmith field: Gulf 323 Goldsmith, 1,165 bbl., tubing, 4,000 gal. acid, 4,135-4,225 ft.
Gulf 324 Goldsmith, 1,364 bbl., tubing, 4,000 gal. acid, 4,120-4,230 ft.
Gulf 325 Goldsmith, 594 bbl., tubing, 4,000 gal. acid, 4,094-4,224 ft.
North Cowden field: Barnsdall 20 Smith, 1,169 bbl., ¾-in. choke, 400-qt. shot, 4,170-4,370 ft.
Richmond Drlg. Co. 3 T.&P., 428 bbl., ¾-in. choke, 300-qt. shot, 4,080-4,200 ft.
Texas Pacific 3 Smith, dry at total depth 4,220 ft.
Johnson field: Sinclair Prairie 4-B Johnson, 1,456 bbl., 1-in. tubing, 280-qt. shot, 4,081-4,144 ft.
Sunray Oil 2-E Johnson, 654 bbl., tubing, 240-qt. shot, 4,120-4,240 ft.
Addis field: Skelly Oil 2 Addis, 952 bbl,. 1-in. choke, 595-qt. shot, 3,835-4,140 ft.

Pecos County

Lehn field: Claude Campbell 3 Masterson-Lehn, 141 bbl., ¾-in. choke, 40-qt. shot, 1,686-1,711 ft.
Fromme field: Davis & White 1 Fromme, 60 bbl., pumping, 1,000 gal. acid, 1,865-1,888 ft.

Upton County

McCamey field: Shell 41 Bowen, old well deepened, old total depth 2,185 ft., new total depth 2,265 ft., new initial 153 bbl., pumping.
Shell 43 Bowen, old total depth 2,135 ft., new total depth 2,203 ft., new initial 170 bbl. oil and 9 bbl. water, pumping.

Ward County

Estes field: Gulf 153 O'Brien, 257 bbl., open casing, 480-qt. shot, 2,616-2,775 ft.
Sealy field: Magnolia 2-41 Sealy, junked at 2,880 ft.
Shipley field: Sinclair Prairie 1 Davis, top anhydrite 450 ft., salt 610 ft., lime 1,625 ft., Yates 1,725 ft., dry at 3,864 ft.

Winkler County

Estes field: Gulf 147 O'Brien, 259 bbl., open casing, 500-qt. shot, 2,699-2,874 ft.

SOUTHERN WEST TEXAS DRILLING REPORT

Crane County

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., drilling 8,416 ft.
Gulf 37 Waddell, 330 ft. from W and 1,650 ft. from S lines Sec. 7, Blk. 23-B, P.S.L. Sur.

Culberson County

Cecil Cothrun 1 Casey-Rounsoville, Sec. 7, Blk. 104, P.S.L. Sur., water from 1,012-20 ft., drilling 1,090 ft.

Ector County

Stanolind 1-B W. F. Cowden, SE W½ Sec. 12, Blk. 44, Twp. 1n, T.&P. Sur., Deep Holt lime test.
Forest Development Corp. 1 Bradley, SE SE Sec. 18, Blk. 43, Twp. 3s, T.&P. Sur., drilled broken pay 4,350-4,410 ft., bailing and testing, cemented back 4,380 ft., oil coming into hole at rate of 1½ bbl. hourly, P.B. 4,362 ft., treated 1,000 gal., taking official gage.

Loving County

H. C. McAuley 1 E. Hall, SE Sec. 60, Blk. 7, W.&N.W. Sur., S.D. 1,690 ft.
Sloan & Zook 1 T.&P. Trust, SW SE Sec. 37, Blk. 56,

Twp. 1s, T.&P. Sur., 3¾-mi. NE of Tunstill gas well.

Menard County

Harry Baldwin 1 J. A. Leggett, 760 ft. from W and 900 ft. from S lines, Sec. 1, B.S.&F. Sur., S.D. 575 ft., (corrected depth).

Pecos County

Culbertson & Irwin 1 R. G. Heiner, NE NE Sec. 589, G.C.&S.F. Sur., Ordovician wildcat, drilling 3,512 ft.
S. D. Pattillo 1 O'Neil, Sec. 74, Blk. 10, H.&G.N. Sur., Ordovician test, shot 140 qts. still testing.
S. D. Pattillo 1 Hoffman, SE NW Sec. 6, Blk. 141, T.&St.L. Sur., 2,000-ft. test, S.D. 1,360 ft. (corrected).

Presidio County

Wilcox 1 Conring, Sec. 102, Blk. 4, H.&T.C. Sur., running 10¾-in. casing at 1,038 ft., S.D. 1,040 ft.
Wilcox 2 Jones-Coffield, Sec. 38, Blk. 34, H.&T.C. Sur., P.B. to 2,369 ft. from 2,399 ft., preparing to P.B. again, last report.

Reeves County

J. B. Dunnigan 1 A. B. Burchard, SW Sec. 7, Blk. 38, P.S.L. Sur., Delaware test, location.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., T.D. 1,805 ft., last report.

Sutton County

S. B. Roberts 1 Geo. Allison, NW NE Sec. 44, Blk. K., G.H.&S.A. Sur.
Domain 1 G. S. Allison, SW NE Sec. 91, Blk. 9, T.W. N.G. Sur., Ellenburger lime test, S.D. 1,098 ft.
S. B. Roberts 1 Allison, NW NE Sec. 44, G.H.&S.A. Sur., preparing ream 310 ft.

Terrell County

Texas Consolidated Oil 1 Holmes, NE NE Sec. 14, Blk. 2-A, G.H.&S.A. Sur., 3,600-ft. test.
H. H. Sides 1 Rose, Sec. 15, Blk. 148, T.&St.L. Sur., rigging up spudder.

Ward County

Fitzpatrick & Slack 1 Wilson, Sec. 145, Blk. 34, H.& T.C. Sur., 1½ mi. SE of discovery well, drilling 4,420 ft.
Gulf 5 Wristen, Sec. 18, Blk. 5, H.&T.C. Sur., T.D. 7,075 ft., P.B. 6,968 ft., saturation in Silurian lime 7,018-60 ft., tested 30 bbl. oil per hour.

Winkler County

Gulf 147 O'Brien, SE Sec. 11, Blk. F, G.&M.M.B.&A. Sur., flowed 250 bbl. oil per day, T.D. 2,874 ft.

NORTHERN WEST TEXAS

Terry County centered attention in the northern part of West Texas as several wildcats drilled ahead. The Gulf 4 Mallett, Section 5, Block X, P.S.L. Survey, wildcat 4 miles west of the Terry County portion of the Slaughter field, was drilling ahead below 5,609 ft. as a deep exploratory test. The test missed the regular San Andres lime pay of the Slaughter field and was scheduled for a deep test about 2 weeks ago. The ultimate depth has not been set.

Sloan & Zook 1 W. E. Bailey, Section 103, Block 4-X, C.&M. Survey, 7½ miles west of Brownfield, topped the solid lime at 4,940 ft. One correlation places it 78 ft. higher, structurally, than the old Uscan Oil 1 Brownfield, a 5,677-ft. failure 9 miles to the west and slightly south. Checked low on the upper markers, the high top of the lime indicates a definite thinning of sections.

NORTHERN WEST TEXAS COMPLETIONS

Cochran County

Duggan field: Devonian 3-C Duggan, 261 bbl., 56/64-in. choke, 12,500 gal. acid, 5,004-51 ft.
Magnolia 1-J Mallett, 761 bbl., 1-in. choke, 10,500 gal. acid, 4,995-5,045 ft.
Osage Drlg. Co. 1-E. Moore, 274 bbl., 1-in. choke, 10,000 gal. acid, 4,978-5,045 ft.

Gaines County

Seminole field: Amerada Pet. 5 Mann, 827 bbl., ½-in. choke, natural, 5,038-5,230 ft.
Amerada Pet. 6 Mann, 723 bbl., ½-in. choke, natural, 5,056-5,245 ft.

Hockley County

Slaughter field: Bass & Dillard 1 Forehan, 817 bbl., casing, 8,000 gal. acid, 4,890-4,980 ft.
Wildcat: Cascade Pet. 1 Walker, Sec. 22, Lge. 22, McCulloch County School Lands Sur., dry at 5,103 ft.
Duggan field: Magnolia 3-G Mallett, 615 bbl., 1-in. choke, 4,500 gal. acid, 4,960-5,011 ft.

Yoakum County

Wasson field: Don Danvers 7 Willard, 949 bbl., open tubing, 10,000 gal. acid, 5,050-5,250 ft.
Humble 11 Bennett, 809 bbl., ¾-in. choke, 10,000 gal. acid, 5,060-5,270 ft.
Magnolia 22 Mahoney, 931 bbl., ¾-in. choke, 6,000 gal. acid, 5,137-78 ft.
Shell 1-A Baumgart, old T.D. 5,000 ft., deepened to 5,187 ft., new initial 1,290 bbl., open tubing, 5,000 gal. acid.
Shell 1-B Baumgart, old T.D. 5,010 ft., deepened to 5,196 ft., new initial 1,128 bbl., open tubing, 5,000 gal. acid.
Shell 1-D Baumgart, old T.D. 5,005 ft., deepened to 5,140 ft., new initial 1,709 bbl., open tubing, 5,000 gal. acid.
Waples-Platter field: Forest Development Co. 1 Whisenant, top anhydrite 2,560 ft., Yates 3,330 ft., Yates frosted grains 3,350 ft., brown lime 4,420 ft., San Andres lime 4,790 ft., junked at 5,515 ft.

NORTHERN WEST TEXAS DRILLING REPORT

Andrews County

Phillips 1-222 Embar, SE SE Sec. 6, Blk. 44, Twp. 1n T.&P. Sur., preparing to drill.
Phillips 1-223 Embar, NE SW Sec. 7, Blk. 44, Twp. 2n, T.&P. Sur., preparing to drill.
Phillips 1 University-Drews, NW NE Sec. 32, Blk. 10, University Lands Sur., drilling 3,935 ft.
Phillips 2 Embar, NE SE Sec. 5, Blk. 44, Twp. 2n, T.&P. Sur., ¾ mile N of Embar, drilling 4,235 ft.
Phillips 1-125 Embar, SE SE Sec. 6, Blk. 44, Twp. 2n, T.&P. Sur., location.

Cochran County

Rhodes and Atlantic 1 Dean, C NE Tract 4, Lge. 89, Lipscomb Co. School Lands, T.D. 5,150 ft., P.B. 5,112 ft., treated with 1,000 gal. acid, testing.

Gaines County

Fred Postello 1 Henry James, SE Sec. 368, Blk. G, C.C.S.D.&R.G.N.G. Sur., slight porosity 5,073-92 ft., T.D. 5,253 ft., S.D.O.
Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., logged new pay about 6,610 ft., tight well, believed drilling about 8,345 ft., application filed to drill to 10,000 ft.
W. E. Smith 1 Smith, NE SW Sec. 189, Blk. 38, W.T. Sur., in Seminole townsite.

Terry County

Gulf 4 Mallett, Sec. 4, Blk. X, P.S.L. Sur., SW of Slaughter field, drilling 5,625 ft.
Sloan & Zook 1 Bailey, Sec. 103, Blk. 4-X, P.S.L. Sur., 4 mi. NE of Wellman, surface casing 232 ft., drilling 5,159 ft.
Denver Prod. & Ref. 1 Lewis, Sec. 62, Blk. D, Gibson Sur., 3½ mi. S of Wellman, drilling 3,300 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Dec. 9.—There were only five completions in the Southeast New Mexico district, all in Lea County, during the past week. New locations totaled eight, with three each in Lea and Eddy counties, and two in Chaves County.

Both of the Chaves County locations are in wildcat territory, however, one of them was first announced almost 2 months ago and is just now getting started. About 9½ miles northwest of the Great Western Producers 1-D State, recent discovery in Lea County, L. E. Elliott is moving material to his 1 State, extreme eastern part of Chaves County. It is located in the C NW NE 16-11-31, near the western line of Lea County. Having received several acreage donations as well as cash donations and having sold several spreads to Pure Oil Co., Atlantic Refining Co. and Phillips Petroleum Co., Elliott plans to carry the test to 4,600 ft., one of the deepest yet to be started in the area.

The other Chaves County location is Roxana Oil 1 Maull, SW NE NW 11-12-25. It has been spudded to 300 ft. and is shut down for surface casing.

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SOUTHEAST NEW MEXICO COMPLETIONS

Lea County

South Eunice field: Texas Pacific 22-A State Acct. 2, SE SW 7-22-36, 480 bbl., ¾-in. choke, 95-qt. shot, 3,778-3,812 ft.

Arrowhead field: Ohio 20 State-McDonald, NE SE SE 13-22-36, 140 bbl. in 3 hr., 1⅝-in. choke, natural, 3,720-50 ft.

Lynn field: Brewer Drlg. Co. 1 Whitten, NE NW SE 33-23-36, 12 bbl., ¼-in. choke, 70-qt. shot, 3,575-3,652 ft.

Vacuum field: Texas 2-AC State, C NW SE 2-18-34, 136 bbl. in 6 hr., natural, open tubing, 4,440-4,710 ft.

Maljamar field: Carper Drlg. Co. 1-B Simon, C NW NE 30-17-32, 89 bbl. in 3 hr., open tubing, 130-qt. shot, 3,650-95 ft.

SOUTHEAST NEW MEXICO DRILLING REPORT

Chaves County

Roxana Oil 1 Franks ..... SE NW NW 17-9-25
7-in. at 425 ft., drilling 812 ft.

Helmes-Martin 1 Stephens ..... C NW NE 22-15-29
Old well drilling deeper, 7-in. at 1,848 ft., drilling 3,025 ft. with show gas.

H. Steinberger 1 Headley ..... NW SW 26-14s-29e
Est. 500,000 cu. ft. gas 1,826-28 ft., show oil 2,885-95 ft., drilling in lime.

Eddy County

Fulton 1 Johnson ..... NW SE 22-19-27
Drilling 1,598 ft.

Truett & Tallmadge 1 Rudahl ..... NE SE 2-20-24
12½-in. 302 ft., drilling 1,140 ft.

Wills & Abell 1 Hale 12-20-30
6,000,000 cu. ft. gas from 1,540-60 ft., sulfur water at 1,823-24 ft., P.B. 1,528 ft., perf. casing 1,540-66 ft., est. 100,000 cu. ft. gas, S.D.

Dooley & Haynes 1 Martin ..... SE NW 9-18-25
5½-in. at 975 ft., S.D. 1,000 ft. (correction).

Trojan 1 Grant ..... SW NE 33-20-25
Set 8¼-in. at 1,300 ft., drilling 1,890 ft.

Clark & LaNeve 1 Boulter ..... SE NW 28-19-27
Show oil 1,126 ft., S.D. 1,250 ft.

Suddreth et al 1 Willis ..... SW NW 14-20-28
6 mi. W of Getty field, location.

Fred Turner 1 DeVito 12-23-35
Show gas 1,100-05 ft., 7-in. 1,500 ft., S.D. 1,670 ft.

Otero County

R. H. Ernest 1 Located Land Co. ..... SE SE 20-25-7
T.D. 3,808 ft., P.B. and drilling out cement 3,770 ft.

TEXAS PANHANDLE

AMARILLO, Tex., Dec. 9.—Eleven new oil wells were completed in the Texas Panhandle fields during the week and no gas wells were finished. New locations showed a decided upturn as a total of 14 were announced as against an average of seven to nine for the past few weeks. The locations went five to Carson County, four to Gray County, five to Hutchinson County and one to Wheeler County.

TEXAS PANHANDLE COMPLETIONS

Carson County

Skellytown field: Cities Service 4 Magnolia lease, 194 bbl., pumping, 3,097-3,120 ft.

Gray County

Pampa field: S. C. Evans 7 Benton, 88 bbl., pumping, 3,190-3,300 ft.

Magnolia 38 fee, 101 bbl., pumping, 2,895-2,913 ft.

Cree & Hoover 1-A Davidson, 20 bbl., pumping, 2,982-3,015 ft.

Lefors field: Wilcox Oil & Gas 44 Comb-Worley, 38 bbl., pumping, 2,814-70 ft.

Hutchinson County

Borger field: J. M. Huber Corp. 1 Riley, 288 bbl., pumping, 3,243-3,255 ft.

Skelly 8 Watkins B, 264 bbl., pumping, 2,765-2,870 ft.

Shell 3-B Harvey Sisters, 417 bbl., pumping, 2,987-3,050 ft.

Travellers Oil 14 Halle B, 594 bbl., pumping, 3,005-65 ft.

Kewanee Oil 49 Lewis, 261 bbl., pumping, 2,895-2,978 ft.

Stinnett field: McIlroy Oil 2 Tomlinson, 135 bbl., pumping, 3,120-3,275 ft.

PANHANDLE DRILLING REPORT

Lubbock County

H. & S. Dev. Co. 1 W. D. MacMillan, SW SW SW Sec. 14, Blk. 2-D, 7 mi. NW of Lubbock, 5,500-ft. test, derrick.

Motley County

Humble 1 Matador, Sec. 29, Blk. J, B.S.B.&C.N.G. Sur., drilling 6,480 ft.

Ochiltree County

James R. Macon 1 W. R. Norris, SW SE Sec. 212, Blk. 43, H.&T.C. Sur., T.D. 6,274 ft., P.B. 4,300 ft., S.D.O., prepare P.B. to 4,000 ft. and shut off water.

Swisher County

Krupp-Flaherty 1 Keen, Sec. 120, Blk. 10-M, 6,500-ft. test, top salt 1,020 ft., S.D., casing 1,747 ft.

State to Survey Bradford Area

OIL CITY, Pa.—The Pennsylvania Topographic and Geologic Survey plans to make a study of forested areas in Venango, Forest, Warren, and McKean counties following completion of a geologic survey of the Venango fields, Dr. Parke A. Dickey, oil and gas geologist of the survey, writes in the November Bulletin of the Pennsylvania Department of Internal Affairs.

He also expressed the hope that if sufficient funds are available the survey proposes to test several geophysical methods on known oil fields to find which is best adapted for local conditions. The results of the tests will be made known to the public which can then employ commercial companies to make tests.

"The discovery of a small but prolific pool southwest of Bradford in 1938 (Music Mountain) has suggested," he wrote, "that in the forested areas of Venango, Forest, Warren, and McKean counties there may still remain a few pools to be discovered. Their discovery, would, however, involve great expense in drilling dry holes. Some of this expense might be eliminated by first assembling all the available results of the previous drilling in this area in order to pick out the likely spots. After the study of the Venango fields is completed, the survey intends to turn its attentions to this area."

The Music Mountain pool in Lafayette Township, McKean County, is in hilly, wooded country, just outside of the recognized limits of the Bradford field proper. Records reveal that a well making perhaps 10 bbl. per day was drilled on the edge of the Music Mountain pool in the early days of the Bradford excitement. But it was in such rough country, with no available roads, that it was not pumped.

However a number of wells were drilled in that locality since the Bradford field was discovered in 1871. It was not until August 24, 1937, that the presence of the large quantities of oil in that section was learned. The Niagara Oil Corp. was drilling what was intended to be a third-sand core test when it unexpectedly struck a well of gusher proportions in the previously unknown Sliverville sand at 1,639 ft., which is about 250 ft. above the top of the Bradford third sand from which other wells in this area produce. Other wells had simply missed the thin streak of pay, oil men explain.

The area of the pool is believed to be about 530 acres. It is about 3.7 miles long and its greatest width is in the southwest end where it is less than 1,500 ft. Two wells have been drilled beyond the southwestern limits of the pool during the summer with shows of oil and gas. However exact production has not been determined since the wells have been shut in with no pipe-line connections.

Another such small pool of shoreline depositions, or

(Continued on next page)

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Harrison County, W. Virginia Wildcat Nears Record Depth

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 9.—During the past week in the lower eastern fields 21 operations were completed of which 4 were dry, 16 gas wells with a daily initial of 12,600,000 cu. ft., and 1 oil producer with a daily initial of 3 bbl.

WEST VIRGINIA

The deep rotary test of Hope Natural Gas Co. on the C. S. Gribble farm in Grant district, Harrison County, is drilling in dolomite lime at 8,911 ft. and nearing a record depth for the state.

In Jackson County Columbian Carbon Co. topped the Corniferous lime at 4,827 ft. in the test on the P. F. Riggs farm, Ravenswood district, and cemented at 4,838 ft. Here, this company is drilling 1 F. F. Starcher at 2,137 ft., and 1 F. L. Roliff at 1,708 ft. In Ripley district the wildcat of the United Carbon Co. is drilling at 2,465 ft. on the B. B. Meadows farm.

In Kanawha County Columbian Carbon Co. is drilling 1 John Price, in Poca district at 6,378 ft., and 1 Copenhaver heirs at 5,617 ft. Both are scheduled for the Clinton sand.

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Prod.	Footage
Gas wells	5	†3.4	12,856
West Virginia			
Gas wells: Oriskany	3	†7.9	15,262
Other	8	†1.3	23,206
Oil wells	1	*3	1,869
Dry holes	4	.....	9,994
Total	16	.....	50,331

*Barrels. †Million cu. ft.

Boone County

Sherman district: Owens, Libby-Owens 34 Peytona Coal Land Co., 73,000 cu. ft. gas, brown shale, T.D. 5,123 ft.

Cabell County

Barboursville district: James Webb, trustee, 1 W. E. Stewart, 60,000 cu. ft. gas, Big lime 1,380-1,520 ft., Big Injun 1,520-1,610 ft., Berea 2,245-50 ft., brown shale 3,005-3,227 ft., gas 3,165 ft., shot 3,005-3,227 ft.

Calhoun County

Center district: W. H. Bickel 1 Etten Snider, 1 bbl and 7,000 cu. ft. gas, Injun sand, T.D. 2,090 ft.

Clay County

Otter district: Pittsburgh & W. Va. 7762 J. F. Wilson, dry, show of gas Big Injun sand, T.D. 2,061 ft.
Union district: Thompson Gas Co. 50 Thompson Land & Coal Co., dry, Injun sand, T.D. 1,985 ft.

Marion County

Paw Paw district: Victor E. Tennant 1 Frank Toothman, 50,000 cu. ft. gas, stray sand 2,630 ft., T.D. 2,700 ft.

Marshall County

Meade district: Hope 2 Oscar McDowell, 33,600 cu. ft. gas, Gordon stray sand, through Fourth sand, T.D. 3,092 ft.

Monongalia County

Battelle district: Gilmore-Hoffman et al 1 Robert Cumberledge, 260,000 cu. ft. gas, Fourth and Fifth sands, T.D. 3,232 ft.

Pleasants County

Union district: J. C. Ruckman et al 1 John Dennis heirs, 3 bbl. and 25,000 cu. ft. gas, Injun sand, T.D. 1,869 ft.

Putnam County

Curry district: Mercer Gas Co. 1 Clarissa Mercer, 760,000 cu. ft. gas, Big lime 1,678 ft., T.D.

Ritchie County

Union district: The Oil & Gas Co. 1 S. O. Prunty, 17,000 cu. ft. gas, Injun sand, T.D. 2,064 ft.

Wayne County

Union district: R. D. Adkins and Mullins Gas Co. 1 F. M. Stiltner, dry, Big lime 1,213-1,384 ft., Big Injun 1,426-50 ft., Berea 1,996-2,008 ft., brown shale 2,640-2,945 ft.

Wetzel County

Church district: Carnegie 1 Mary A. Sole, dry below Gordon stray, drilled through Fifth, T.D. 3,003 ft.

ORISKANY GAS FIELDS

Kanawha County

Poca district: United Carbon 1 J. W. Burdette et al, 2,402,000 cu. ft. gas before shot, Corniferous lime 4,903 ft., Oriskany 5,011 ft., T.D. 5,055 ft.
United Carbon 1 Lillie Sigman, 2,516,000 cu. ft. gas, Corniferous lime 4,767 ft., Oriskany 4,859 ft., T.D. 4,951 ft.

DRILLING

Poca district: United Fuel 4892 J. A. Wines, top Corniferous 4,905 ft., casing to 4,920 ft.
Godfrey L. Cabot 4 J. L. McLean, Corniferous lime 4,965 ft., Oriskany 5,065 ft., gas gaging 492,000 cu. ft. to 5,083 ft.
Godfrey L. Cabot 1 Mary A. Mason, Corniferous lime 4,853 ft., casing 4,874 ft.
United Carbon 1 A. S. Peters, Corniferous lime 4,658 ft., casing to 4,679 ft.
Columbian Carbon 1 L. D. Reynolds, Corniferous lime 4,983 ft.

Jackson County

Washington district: Godfrey L. Cabot 1 Charles L. Mangus, 3,000,000 cu. ft. gas, Corniferous lime 5,050-5,172 ft., Oriskany 5,172 ft., gas 5,195-5,202 ft. and 5,244-48 ft., T.D. 5,256 ft.

NEW WORK

Braxton County

Birch district: Cameron Producing Co. 3 Vada Hamric, elev. 953.7 ft.
Pittsburgh & W. Va. 7780 C. L. Hamric, elev. 951 ft.

Gilmer County

Troy district: South Penn Natural Gas Co. 4 S. K. Adams, drill deeper.

Pleasants County

McKim district: R. H. Bonar and L. B. Coffman 2 S. T. Fleming, elev. 1,050.5 ft.

Ritchie County

Grant district: A. R. Kelly 1 B. M. Cowell, elev. 1,043.6 ft.

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, Peoples Natural Gas Co. is drilling 3 Piedmont Coal Co. at 5,615 ft. and have drilled the water well for No. 4 and will soon spud. The New Penn Development Co., William E. Snee and others have reached 2,165 ft. in 3 Summit Hotel (Heyn). In North Union Township, Wasson and others are drilling 2 J. H. Sorg at 6,670 ft. and should have the Onondaga within the week. In Maryland New Penn Development Co. et al have a fishing job in the test on the Humberson farm on the Accident dome in Garrett County.

Armstrong County

Cowanshannock Township: Peoples Natural Gas Co. 1 James McKinney, 38,000 cu. ft. gas, Bradford sand, T.D. 3,656 ft.

Clarion County

Red Bank Township: T. W. Phillips 1 D. I. Miller, 24,000 cu. ft. gas, Bradford sand, T.D. 3,039 ft.

Washington County

Amwell Township: Carnegie 4 W. B. Redd, 56,000 cu. ft. gas, Fifty foot sand, T.D. 2,823 ft.
Morris Township: South Penn 1 Sharpnack (Oliver Booth), 3,200,000 cu. ft. gas, Injun sand top 2,096 ft., gas 2,097-2,101 ft., T.D. 2,102 ft.

Westmoreland County

Allegheny Township: Apollo Gas Co. 2 Sadie Anderson, 112,000 cu. ft. gas, Hundred foot sand and Fifth sand, T.D. 1,776 ft.

DRILLING

Armstrong County

Bethel Township: T. W. Phillips 1 Mrs. H. E. Gilchrist, 3,200 ft.
Boggs Township: John Wray et al 2 Ed Williamson, 450 ft.
Humphries, Stone & McCall 1 Lidge Best, 150 ft.
J. K. Sharp Co. 1 Joseph Safton, 954 ft.
Burrell Township: Equitable 1 Mrs. George Cravener, 3,394 ft.
East Franklin Township: Leithold Gas Co. 1 John Roofner, testing Murraysville sand.
Cowanshannock Township: Peoples 1 William Boyer, 2,380 ft.
Shelocta 1 Park Rarick, rigging up.
William McCollins 1 A. L. McCullough, rigging up.
T. W. Phillips 3 Harry Boyer, 1,489 ft.
Kiskiminitas Township: Chestnut Ridge 2 E. J. Shirey, 1,570 ft.
Kittanning Township: Equitable 1 Edward Boarts, rigging up.
Plum Creek Township: Shelocta 2 Harry Kough, 480 ft.
South Buffalo Township: Pleasant Valley 1 C. J. Stepp, 45 ft.
Wayne Township: Galbraith Co. 1 William Alcorn, 800 ft.

Clarion County

Limestone Township: George Hall 1 Perry Thompson, 600 ft.
Monroe Township: Owens-Illinois Glass 1 J. C. Heinrick, fishing.
Piney Township: Frank Shreffler 8 Clarion County Homes, S.D. 956 ft.
Porter Township: Gourley Gas Co. 3 Andrew Gourley, 1,080 ft.
Red Bank Township: Mayport Clay Co. 1 Samuel Wyncoop, 2,300 ft.
O. H. Culbertson 2 Gabe Stahlman, 130 ft.
T. W. Phillips 2 M. Dinges, 100 ft.

Fayette County

German Township: J. H. Carnell 1 Albert Lily, 1,246 ft.
Menallen Township: Eberly, Snee et al 1 Bachman, 800 ft.
Nicholson Township: Greensboro 1 George Lecrone, 1,150 ft.
Duguesne 1 Hattie Talbert, 1,625 ft.
Noolen Oil & Gas Co. 1 J. D. McCann, 1,025 ft.

Greene County

Aleppo Township: Guy B. Patterson 1 Samuel Fuller, 930 ft.
Center Township: Devine et al 1 Hugh Smith, 1,965 ft.
Jackson Township: H. E. Milliken et al 1 E. Chaney, hauling in rig.
Cleveland-Cameron Oil & Gas Co. 1 Cleveland Morris, rig completed.
Monongahela Township: Greensboro 1 Charles Hopton, 43 ft.
Harry Scott et al 1 Silas Provins, S.D. 550 ft.
Morris Township: Romney Rutan et al 1 I. J. Clutter, rigging up.
Richhill Township: Carnegie 2 Ella Sowers, 1,725 ft.
Manufacturers Light & Heat 1 William Hughes, rig completed.
Wayne Township: Freeland et al 1 J. H. Simpson, 2,560 ft.
Whiteley Township: Lewis Petit et al 1 Shields, 2,260 ft.

Indiana County

Armstrong Township: T. W. Phillips 1 W. E. Sell, 1,205 ft.
Center Township: T. W. Phillips 1 W. H. George, 3,415 ft.
North Mahoning Township: John Wray et al 1 Floyd Stear, 250 ft.
Washington Township: T. W. Phillips 1 Mary J. Fairman, 1,410 ft.
T. W. Phillips 1 D. C. Bethel, 1,092 ft.
T. W. Phillips 2 J. L. Jones, casing at 1,105 ft.
T. W. Phillips 1 S. P. Kunkle, 2,060 ft.

Washington County

Amwell Township: Chivers et al 2 James Brister, 2,419 ft.
Carnegie 1 D. C. Blake, rigged up.
North Strabane Township: Carnegie 1 Cleil Gilkeson, building rig.
Somerset Township: Carnegie 2 J. D. Amos, 1,402 ft.
Equitable 1 Riffle, 2,375 ft.
South Franklin Township: South Penn 2 Eddy, 3,276 ft.

State to Survey Bradford Area

(Continued from preceding page)

familiarly known as "shoe string" sand, was the Queer sand pool about a mile south of Tidioute in southern Warren County, which was brought in about 1919 by Charles Carnahan. The Queen sand, from which the wells produced, was found about 1,200 to 1,400 ft. deep, well under the Venango third sand, which was about 110 ft. deep on the flats and 250 ft. down elsewhere. Some of the wells ranged as high as 300 bbl. per day. The flow did not hold up and now the wells are normal Pennsylvania stripper wells.

The area had been drilled for third-sand wells, but it was not until Mr. Carnahan went beyond the third sand that the pool of oil was discovered.

Speaking of the work being done in the Venango County field and other fields previously, Mr. Dickey points out that the oil sands are "mostly long, narrow, irregular bodies and there are very few domes. The oil is found where the sand happens to be present and porous and a source of oil is present. There is no way of locating such bodies by examining the surface rocks. The structure, however, may be valuable in the search for deep gas pools, and is useful in finding ground water and coal, and necessary to a clear understanding of what is under the surface, so that a map of surface geology is being made for the area.

"In order to have a clear idea of the subsurface, every available well log is being obtained, including the record of depth at which the various sands occur, and their thickness. Most of these wells are then located on the ground and their elevations determined."

"A major purpose of this survey," Mr. Dickey continues, "is to collect and preserve all the information still available on the wells of the region. About 15,000 well records thus far have been collected and nearly 5,000 have had their locations plotted on topographic maps and their elevations determined and recorded on the well logs. Many uses that cannot be predicted will doubtless be made of these records."

By R. MARNE SANFORD

Vogtsberger and Griffin Fields Have Extension Tests

WICHITA FALLS, Tex., Dec. 9.—The Vogtsberger field in northeastern Archer County is being closely watched as two wildcat outposts, one to the southeast and the other to the northwest, both proceed ahead. The Griffin field of western Archer County, which has been given its largest producer, received three new locations late in the week to indicate immediate development for this 2-year-old yet little-exploited field.

The Vogtsberger field was discovered by Walter Gant 1 Vogtsberger, Block 3, German Emigration Lands Survey, 7 miles south of Wichita Falls, in June of the past year. The discovery well was completed from the Strawn sand from 4,651-4,725 ft. for 90 bbl. of oil in 3 hours, or at the rate of about 720 bbl. daily. The same operator's second test in the field, about ¼ mile north and slightly west of the discovery, was completed for 83 bbl. in 2 hours, or at the rate of 906 bbl. daily. At present attention is on W. B. Omohundro 1 Browning, mile northwest of the field, and on Gant & Feagin 1 Hunter, 2 miles southeast of the field. The former well, SE SE SE Section 7, G.E.L. Survey, was last reported milling on bit cone at a total depth of 4,522 ft., approximately 135 ft. short of the projected pay zone. The Hunter well, C E½ NW Section 7, Block 1, H.&T.C. Survey, is drilling below 4,910 ft. in shale. It is about 260 ft. below the discovery pay section and did not report any shows of oil while drilling it.

SUMMARY OF COMPLETIONS

North Texas

	No.	Prod.*	Footage
Oil wells: K.M.A.	5	3,187	19,611
Olney	3	454	2,689
Other fields	18	2,580	30,166
Dry holes: K.M.A.	1	.....	4,127
Olney	2	.....	1,554
Other fields	2	.....	2,424
Total	31	.....	60,571
Recompletions	1	.....	.....

West Central Texas

Oil wells: Miscellaneous fields	3	*363	6,012
Gas wells: Miscellaneous fields	2	†3.5	3,786
Dry holes: Miscellaneous fields	3	.....	4,581
Wildcats	1	.....	1,794
Total	9	.....	16,173

*Barrels. †Million cu. ft.

Griffin Field

The Griffin field of extreme northwestern Archer County, discovered by E. P. Griffin 1 Waggoner in April 1939 and since given very little development, has been extended a mile to the east and has been given three new locations in the extension area. The new outpost producer is Kadane 1 Griffin, NE SE SE, Block 13, Palo Pinto School Lands Survey, just a mile east of the discovery well. On latest flow the well made 87 bbl. hourly through ¾-in. choke from sand drilled from 4,337-51 ft., slightly higher than the discovery which was completed for 16 bbl. hourly from sand at 4,394-4,406 ft.

Jack Kadane has staked an east offset to the new well as his 2 Griffin, a southeast diagonal offset as his 3 Griffin, and a diagonal southwest offset as his 1-B Griffin.

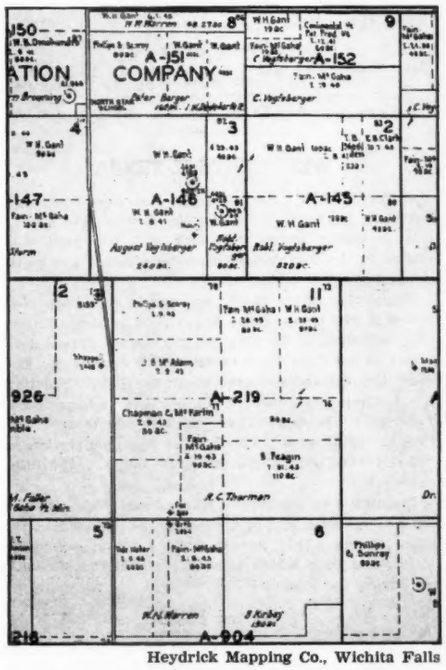
Field Openers Still Testing

A wildcat in Wilbarger County drilled a show of oil the past week and has cemented casing for completion attempts as a new field discovery. It is Big Six Oil 1 A. P. Morris, wildcat 3 miles west of Vernon and located in the SE SE SE Section 3, Block 14, H.&T.C. Survey. Sand with an odor of oil was cored from 2,905 to 2,915 ft. and hole was bottomed at 2,917 ft. The 7-in. casing is cemented at 2,905 ft. The extent of the oil show is not known, however, the Big Six Oil Co. added to its acreage in the area by paying $5,000 for the south half of the section adjoining the discovery well on the north.

Two wildcats in Jack County are showing for deep field discoveries. Rathke Oil 1 Moseley, John Harrison Survey, 12 miles southeast of Jacksboro, is drilling ahead at about 4,900 ft. and still blowing considerable gas. The well made about 1,500,000 cu. ft. of gas from 4,745-50 ft. and found increases from 4,751-62 ft.

Another wildcat in Jack County which is definitely a field discovery of some magnitude is Continental 1 Robertson, M. J. Swan Survey, 6 miles southeast of Bryson. The test topped the Mississippian lime at 5,307 ft. and logged shows of oil from 5,350-60 ft. The Ellenburger was topped at 5,375 ft. and a show of oil was found on a core from 5,376-86 ft. Five-inch casing is now being set for completion attempts. The well showed a recovery of 240 ft. of oil on an 11-minute drill-stem test. Gas volume was estimated at about 5,000,000 cu. ft. daily.

Considerable attention was centered early in the week on a wildcat in northern Montague County when shows of oil were logged from 3,391-39 ft. It was Tom F. Hunter 1 Fatheree, S. L. Gilliland Survey, 2 miles west of Illinois Bend. A 30-minute drill-stem test recovered 15 ft. of black oil and 15 ft. of oil-cut mud, and 3 thribles of salt water. The show was temporarily passed up and it is drilling ahead below 3,992 ft.



Heydrick Mapping Co., Wichita Falls

The Vogtsberger field of northeastern Archer County, opened only a few months ago, has a northwest outpost and a southeast outpost both drilling. It is a lower Strawn sand field and on the northeast-southwest trend with the prolific Hull-Silk field to the southwest

NORTH TEXAS COMPLETIONS

Archer County

Holliday field: L. T. Burns 1 Wilson-McCrory, 10 bbl., 1,463-73 ft.
Cochran & Cain 12 Little B, 20 bbl., 660-75 ft.
Cox & Hamon 5 Anderson, abandoned location.
Ligon 9 Little B, 10 bbl., 1,360-75 ft.
Texas 2 Wilson, dry at 1,650 ft., old well drilled deeper.

Baylor County

Seymour field: British American 1 Turbeville, 806 bbl., 2,514-20 ft.

Clay County

Thornberry field: Akin 1 Ramsey, 30 bbl., 1,074-1,107 ft.
Burns 6 Hamilton, dry at 287 ft.
Johnson & Kouri 3 Taylor-Elliott, 5 bbl., 282-88 ft.
Sussex Oil 17 Glasgow, 7 bbl., 170-80 ft.

Cooke County

Muenster field: Bridwell Oil 8 Flusche B, 60 bbl., 776-86 ft.
Bridwell Oil 8 Flusche B, 55 bbl., 799-810 ft.
Kingery Brothers 2 Truebenbach, 221 bbl., 1,294-1,322 ft.
Bulcher field: Kewanee Oil & Gas 13 Lanier B, 10 bbl., 1,338-48 ft.

Jack County

Bryson field: Nelson Oil 2 Bridwell, 49 bbl., 2,957-75 ft.
Steed 1 Derrick, 355 bbl., 3,096-3,105 ft.

Montague County

Nocona field: Continental 4 Hynds, dry at 2,137 ft.
Continental 1 Rowland, 9 bbl., 777-85 ft.

Wichita County

Asylum field: Petroleum Prod. and Continental 1 Bullington, 346 bbl., 4,709-26 ft.
Burkburnett field: Staley Oil 1 Glass, 30 bbl., 1,315-33 ft.
Story 1 Hefley, 5 bbl., 1,316-20 ft.
K.M.A. field: S. H. Fagadau 2 Potts, dry at 4,127 ft.
Fain-McGaha Oil 6 Griffin, 845 bbl., 3,725-87 ft.
Hanlon-Buchanan 1 Burnett, 395 bbl., 4,112-38 ft.
Shell 14 Griffin, 1,046 bbl., 3,722-3,836 ft.
Southport Pet. 11-AA River bed, abandoned location.
Texas 7 Thom, 656 bbl., 3,815-48 ft.

Wilbarger County

Vernon field: Davis Oil 2-A Waggoner-Smith, abandoned location.
Paradise Oil 8 Waggoner, temporarily abandoned at 20 ft.
K.M.A. field: Consolidated Oil 5 Ancell, 245 bbl., 3,962-4,002 ft.

Young County

Olney field: Harrell 4 Rogers, 145 bbl., 882-91 ft.
Harrell 5 Rogers, 208 bbl., 888-99 ft.
George Keith, Jr., 2 Rogers, 101 bbl., 894-99 ft.
R. H. Larsen 1 Kirkland, dry at 602 ft.
Stafford 1 Hamilton, dry at 952 ft.
James field: Humphrey 5 Jeffery, 552 bbl., 3,928-4,032 ft.

NORTH TEXAS DRILLING REPORT

Archer County

Adams Oil & Gas 1 Turbeville, Lot 39, J.C.S.L. Sur., 5,000-ft. test, drilling 4,995 ft.
Walter Gant 1 Hunter, SE NW Sec. 7, Blk. 1, H.&T.C. Sur., 5,300-ft. Caddo lime test, drilling 5,010 ft.
Jack Kadane 1 Griffin, SW SE Blk. 13, P.P.C.S.L. Sur., 4,500-ft. test, 1½ mi. E Griffin field, show oil 4,337-51 ft., T.D., 6⅝-in. casing 4,337 ft., flowed 90 bbl. oil per hr. for 7 hr., awaiting gage.
W. B. Omohundro 1 Coleman, Blk. 52, Madison County School Lands Sur., drilling 2,690 ft.

Baylor County

Rogers & Lanfair 1 Howe, J. Howe Sur., Abst. 572, S.D. 2,215 ft.

Clay County

Carlos Wagner 1 L. C. Thaxton, Sec. 2, T.&N.O. Sur., 6,500-ft. test, location.
R. H. Dearing 1 O. O. Ross, Sec. 8, J. Wyont Sur., Abst. 902, location.

Cooke County

Dick Eubank 1 Sam Seagraves, SE cor. O. M. Gray Sur., Abst. 415, near Hood, 2,200-ft. test, Ordovician, drilling 1,760 ft.

Denton County

Amon G. Carter 1 W. P. and A. P. Allen, S. Westbrook Sur., 7-in. 5,391 ft., drilling 6,007 ft.

Grayson County

Texas Co. 1 Hutchinson, Samuel Stewart Sur., northeast corner of county, 7,500-ft. test, drilling 4,600 ft.

Hood County

W. G. Martin 1 W. F. Thorman, E cor. of 2,956-acre ranch, F. F. Anderson Sur., 5,000-ft. test, location.
Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, T.D. 1,180 ft.

Jack County

Continental 1 Robertson, M. J. Swan Sur., Abst. 1650, lime, show oil 5,345-86 ft., D.S. test recovered 240 ft. oil in 11 minutes, ran 5⅞-in. casing for test.
R. A. Conkling 1 M. Hoofle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, S.D. 3,410 ft., fishing.
Rathke Oil 1 Moseley, J. Harrison Sur., Abst. 259, drilling 4,900 ft.
Hanlon-Buchanan 1 Smith, NW cor. Smith tract in S. H. Tilgham Sur., 8 mi. SW Jacksboro, 3,150-ft. test, show oil 2,937-46 ft., 6⅝-in. 2,855 ft., T.D. 2,975 ft., cleaning out to test.
K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, derrick.

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Montague County

Walter Gant 1 Will Laird, R. T. Millard Sur., Abst. 470, 7 mi. W of Sunset, 6⅝-in. casing at 6,641 ft., T.D. 6,651 ft., perf. casing 5,775-5,860 ft., swabbed dry, perf. and squeezed, testing, est. 30 bbl.
T. F. Hunter 1 Fatheree, L. S. Gilliland Sur., 3 mi. W Illinois Bend, 6,000-ft. test, drilling 3,845 ft.
Benson & Benson 1 Joe Benton, Abel A. Lewis Sur., 2 mi. SE of Ringgold field, 10-in. 508 ft., drilling 4,492 ft.
J. G. Hammond 1 Jester, 84-acre tract in E. Wingate Sur., Abst. 835, 2 mi. W Mallard, 6,500-ft. test, drilling 5,748 ft.
Sinclair Prairie 1 W. G. Hawkins, 631 ft. from N and 330 ft. from E lines of farm in Sec. 17, H.&T.C. Sur., 3 mi. SE of Ringgold, location.

Parker County

Higginbotham 1 Gilbert, T.&P. Sur., Abst. 1958, T.D. 4,800 ft., fishing.

Tarrant County

Bruce Sullivan 1 W. C. Putnam, 200-acre tract in Milley Gilbert Sur., 6,500-ft. test, drilling 3,715 ft.

Wilbarger County

Charles Barnes and R. A. Andrews 1 Clarida, NE Sec. 97, Blk. 14, H.&T.C. Sur., S.D. 3,005 ft.
W. H. Gant 1 Mock, Sec. 23, Blk. 11, H.&T.C. Sur., 6,000-ft. test, spudded.
Big Six Oil 1 Morris, Sec. 3, Blk. 14, H.&T.C. Sur., show oil 2,895-2,907 ft., 7-in. 2,895 ft.

Wise County

Cranfill & Rogers 1 McKay, Sec. 8, Falls C.S.L. Sur., 7-in. at 5,796 ft., coring pay 5,797-5,858 ft., fishing sand pump.
Manahan Oil 1 E. R. Collier, J. M. Wade Sur., Abst. 868, 12½-in. 520 ft., S.D. 4,290 ft.

Young County

Ben H. Rankin 1 Marry Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, small showing oil 3,575-3,600 ft., 5½-in. 3,565 ft., drilling plug and bailed dry, S.D. 3,613 ft.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Dec. 9.—The new Olson area north of the Avoca field in Jones County was given a new producer during the week and new tests were staked in the Akard field of Jones County and in the wildcat area of western Shackelford County.

Completion of the third producer in the Olson field, which is just north of the Avoca field in Jones County, was registered at the King Oil 1 Almquist, direct north offset to the King Oil 1 Olson, which opened the field early this fall to production from the Palo Pinto lime. No. 1 Almquist pumped 70 bbl. of oil in 24 hours on official gage. Production was natural and from saturation in the lime at 3,235 ft. The new well is located 330 ft. out of the SW cor. of SE Section 181, B.B.B.&C. Survey.

Defining the northwest side of the field is King Oil 2 Seth, 990 ft. out of the SE cor. of SW Section 181, same survey. This test is drilling ahead below the Palo Pinto lime which was drilled with no shows of oil during the week.

Akard Field

A new northeast outpost has been staked to the Akard field in Jones County by C. W. and W. L. Snoddy of Abilene. It will be 1 J. S. Adams, near the center of the west line of the Adams 160-acre tract in Subdivision 2 and 3, Section 9, Block 16, T.&P. Survey. It is only about 990 ft. northeast of a recently completed well which extended the field ¾ mile to the northeast. The ¾-mile extension was Ungren & Frazier 1-A Akard, completed for 177 bbl. of oil daily. The new outpost test, 1 Adams, is on a farmout tract obtained by the operators from Sinclair Prairie Oil Co.

Shallow Discovery in Shackelford County

A new shallow discovery was registered in Shackelford County when Fortex Oil 1-A Newell was completed the past week for 40 bbl. of oil daily after a 10-qt. shot in the Hope sand from 1,169-83 ft. The discovery is just one location offset to the company's 1 Newell which found saturation in the Hope sand several weeks ago but was plugged after hole was lost in attempting to drill deeper for a test of the lower Hope sand. The new discovery is located 660 ft. from the south and 240 ft. from the east lines of the SW Section 12, Block 12, T.&P. Survey, 6 miles west of Albany. Roeser & Pendleton of Fort Worth hold the acreage offsetting the discovery to the east and Rhodes & Highers hold the south offset acreage.

Seeking new production on the large Cook ranch in western Shackelford County, Roeser & Pendleton, Fort Worth, have spudded a new wildcat test. It is 1-118 Cook, located in the SW Section 118, E.T. Survey, 1½ miles northwest of the operator's production in the large Cook field. It is also about 2 miles northeast of a failure drilled by the firm last week which was carried to 1,700 ft.

WEST CENTRAL TEXAS COMPLETIONS

Brown County

Semiwildcat: Hogan & Stewart 2 Perry, 10 bbl., pumping, 900-13 ft.

Callahan County

Putnam field: H. T. Wagley 1 Williams, dry at 750 ft.

Coleman County

Santa Anna field: Coleman Oil & Gas 1 Davis, top Marble Falls 2,222 ft., show oil 2,300-06 ft., T.D. 2,306 ft., P.B. to 2,260-65 ft., completed 1,500,000 cu. ft. gas.
Novice field: States Oil 6 Morris, 333 bbl., flowing, ¼-in. choke, 3,560-91 ft.

Jones County

Olson field: West and Ungren & Frazier 1 Carlton, dry at 3,246 ft.

Shackelford County

Albany field: J. L. Hart 7 Sanders, dry at 585 ft.
Wildcats: R. F. Hart 1 Todd, 1,170 ft. from N and 150 ft. from W lines of Sec. 10, B.A.L. Sur., temporarily abandoned location.
Roeser & Pendleton and Continental 1-A-141 Cook, 1,055 ft. from S and 660 ft. from W lines, Sec. 141, E.T. Sur., dry at 1,794 ft.
Bluff Creek field: C. J. Kleiner 2-C Morris, 20 bbl., pumping, 1,501-08 ft.
Hickok & Reynolds 1-A Morris, 2,000,000 cu. ft. gas, 1,470-80 ft.

WEST CENTRAL TEXAS DRILLING REPORT

Brown County

A. J. Stokes 1 B. S. Bayston, 210 ft. from SE line and 2,962 ft. from SW line of Prosper Mangel Sur. 604, drilling 1,180 ft.

Callahan County

Rhodes Drilling Co. 1 N. M. George, NW Sec. 75, O.A.L. Sur., 4 mi. E Baird, 2,700-ft. test, small show oil 2,139-47 ft., tested dry, drilling 2,310 ft.
W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines of Sec. 2, C.&M. Sur., spudded and shut down.
N. D. Gallagher 1 Grisson, 2,300 ft. from N and 220 ft. from E lines Sec. 2, S.P. Sur., salt water 1,738-43 ft., S.D. 1,743 ft., T.D.
C. D. Hagarty 1 Windham, 990 ft., from N and 330 ft. from W lines SE Sec. 154, G.H.&H. Sur., show oil 980-985 ft., S.D. but may deepen.
Reeves & Sorrell 1 Young, 1,980 ft. from N and 660 ft. from E lines Sec. 37, B.B.B.&C. Sur., H.F.W. 1,975-2,000 ft., S.D., prep. P.B. and test.

Coleman County

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E. R. Sur., 2,100-ft. test, location.
R. H. Murray 1 Morris, 467 ft. S and W of NE 160 acres of J. Greenwood Sur. 304, 10-in. 1,025 ft., drilling 1,208 ft.
M. R. Stuard 1 Minear, 330 ft. from N and 1,850 ft. from E lines of 369-acre tract in E. Votaw Sur. 244, location.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur., S.D.R. 85 ft.
Natural Resources 1 Armor, Sec. 105, T.&N.O. Sur., 5 mi. NE of Eden, prepare to resume drilling at 1,565 ft., contract depth 3,250 ft., to Ellenburger lime, C.O. to old T.D., prepare resume drilling.

Concho County

Floyd C. Dodson 1 Robt. Wilson, Thomas Green Sur., 10 mi. SW Eden, oil show from 3,756-59 ft. failed to produce, drilling deeper at unreported depth.

Eastland County

W. M. Morris 1 Carrie Bryant, 1,520 ft. from N and 200 ft. from W lines of SE Sec. 20, Blk. 1, H.&T.C. Sur., spudded and S.D.
Hickok Oil 1 Luse & Gray, NE Sec. 486, S.P. Sur., Ordovician test ¼ mile SE of new McElreath field, 4,250 ft., test, location.

Erath County

W. A. Young 1 J. B. Mills, J. Harvey Sur., 5 mi. NW of Dublin, T.D. 212 ft., C.O. hole.

Fisher County

F. A. Stephenson 1 Maberry, SE SW Sec. 56, Blk. 1, H.T.&B. Sur., 3,400-ft. test, cored 3,285-3,302 ft., recovered sand showing oil, set casing, drilled plug, 800 ft. oil in hole, 5½-in. at 3,271 ft., swabbing and flowing by heads 3,202 ft., S.D. 3,312 ft.
General Crude Oil 12 Flanigan, center of old Royston field, Ordovician test, drilling 5,490 ft.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines, W. H. Crowder Sur., rigging up to drill deeper below 3,010 ft.
C. J. Meyers 1 Oats, 420 ft. from S and 1,035 ft. from E lines, F. Hughes Sur., 4,000-ft. test, casing set at 3,400 ft., S.D. 3,867 ft., T.D.
Falls Refg. Co. (formerly Wallace & Vickers) 2 Lund, Cent. S½ of 20 acres of N½ of SW¼, R. J. Bailey Sur. 51, top Marble Falls 3,245 ft., show oil 3,260-65 ft., 6⅝-in. 3,256 ft., show oil 3,392-3,400 ft., live green oil 3,428-38 ft. and 3,458-62 ft. T.D. 3,615 ft. in water, plugged back to 3,290 ft., swabbing 2 bbl. oil and 6 bbl. water per day.
Gunther & Smith 1 Thompson, 467 ft. from SE and 4,533 ft. from SW lines of Rhody Kennedy Sur., spudded and shut down.
Hensley & Watson 1 Manning, 467 ft. from W and 2,500 ft. from S lines of Agapo Gaithan Sur., rotary on location.
Bob Waters 1 Oates, 3,350 ft. from SE and 8,450 ft. from NE lines of F. Hughes Sur., S.D.O. 350 ft., may change operators.

Jones County

Pearson 1 Carlson, SE W½ N½ Sec. 1, Blk. 5, H.&T.C. Sur., Palo Pinto test:
Danciger Oil & Ref. 1 Nelson, SW cor. Lot 82, De Witt Co. Sch. Lds. Sur. 126, drilling 1,825 ft.
G. M. Gillespie 1 J. T. King, 990 ft., from N and 330 ft. from E lines of NW Sec. 53, O.A.L. Sur., drilling 665 ft.
Humble 2 Sears, 467 ft. from S and W lines of Sec. 37, Blk. 18, T.&P. Sur., drilling 1,425 ft.
T. D. Humphrey 1 Leslie Lipham, 2,705 ft. from N and 4,320 ft. from E lines of Sec. 18, Blk. 15, T.&P. Sur., drilling 2,730 ft.

McCulloch County

W. J. Dillard 1 E. B. Garrett, 467 ft. from N and E lines of Survey 934, Abst. 1196, 3,000-ft. test, location.

Menard County

Harry Baldwin 1 Leggett, SW SW Sec. 1, B.S.&F. Sur., drilling 745 ft.

Nolan County

Arthur Harvey 1 L. N. McRee, SW NE Sec. 43, Blk. 19, T.&P. Sur., drilling 3,350 ft.

Palo Pinto County

Cole & Davis 1 Rogers, 467 ft. from S and E lines Sec. 894, T.E.&L. Sur., T.D. 1,002 ft., preparing to drill deeper.

Georgian Oil 1 Weldon, A. J. Smith Sur., Abst. 393, S.D. 1,007 ft.

E. Guyer 1 Dalton, L. B. Dayton Sur., Abst. 153, show gas 3,827-53 ft., show oil and gas 3,879-91 ft., bailing live oil.

Elgin & Watson 1 Watson, NE NW Sec. 10, Blk. 2, T.&P. Sur., S.D. 4,065 ft.

Runnels County

A. J. Johnson 1 Bert Fletcher, E. W. Bull Sur., 333, 5,500-ft. test, S.D. 515 ft.

San Saba County

Three Widows Oil 1 Ballard, NW cor. S½ Sec. 80, H. Behrenroth Sur. 506, 2,000-ft. test, top Ellenburger 1,896 ft., sulfur water, S.D. at T.D. of 1,952 ft.

Shackelford County

Georgian Oil Corp. 2 Blach, 1,290 ft. from SE and 540 ft. from SW lines Sec. 301, T.E.&L. Sur., deep test, spudded and shut down.

Choate 1 Green, 150 ft. from N and W lines of N½ SE Sec. 61, Blk. 12, T.&P. Sur., location.

R. T. Nail 1 Cook, 150 ft. from N and W lines of SE SW Sec. 53, E.T. Sur., spudded and shut down.

Taylor County

Ce-beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test., S.D. 2,300 ft.

Throckmorton County

Humble 1 Durham, Sec. 1627, T.E.&L. Sur., drilling 5,890 ft.

Homer Moore and J. E. Dodson 1 J. O. Crump, Blk. 956, T.E.&L. Sur., location.

Jack Bell 1 J. B. Putnam, C.I.R. Sur. 25, 14 mi. N of Throckmorton, 4,300-ft. test, location.

Oklahoma Fields

(Continued from Page 70)

Wildcat: Davon 1 Sporleder, C SW NW 35-12-9, dry, T.D. 3,978 ft., Hunton 3,918-78 ft.

Payne County

Langston field: Amerada-Stanolind 4 Fruin, C E½ SE NW, 12-17-1, old well plugged back from 4,850 ft. to 4,660 ft., perforated 4,560-80 ft., flowed 1,472 bbl. through choke in 24 hr. with 2,000,000 cu. ft. gas.

Texas 4 Longan, C E½ NE NW, 12-17-1, old well plugged back from 4,845 ft. to 4,741 ft., flowed 550 bbl. in 7 hr. from Hunton 4,555 ft.

Pittsburg County

Featherston gas field: Choctaw 1 Gilstrap, SE SW NE 23-7-17, flowed 2,500,000 cu. ft. gas, gas sand 2,042 ft., T.D. 2,546 ft., 500 qt. 2,042-2,350 ft.

Pontotoc County

Bebee field: Cornell 2-B Gray, NW NE SW 25-5-4, pumped 105 bbl., Viola 2,487 ft., T.D. 2,575 ft.

Wildcat: Patterson 1 Yates, C SW SE 24-5-6, dry, T.D. 1,993 ft.

Pottawatomie County

St. Louis field: Kerlyn Oil 2 Oga, SW NW NE 17-7-5, dry, T.D. 3,386 ft., broken lime 3,345 ft., sand 3,350 ft.

Barnsdall 3 Robertson, SW NE SE 30-8-4, flowed 135 bbl. through ⅛-in. choke, Hunton 4,338 ft., T.D. 4,366 ft., 1,000 gal. acid.

Shawnee pool: Thornton 1 McGee, SW SE NW 31-11-4, pumped 12 bbl., Earlsboro 4,467 ft., T.D. 4,505 ft.

Wildcat: Vierson 1 Meyers, SE NE NE 1-11-6, dry, T.D. 4,606 ft., dolomite 4,495 ft., Wilcox 4,533-42 ft., show oil, sandy dolomite 4,573 ft., second Wilcox 4,576 ft.

Seminole County

Wildcat: Amerada 1 Campbell, C N½ SW SW 30-9-6, pumped 460 bbl. 43.5 gr., Wilcox 4,220 ft., T.D. 4,274 ft., 80 qt. 4,233-73 ft.

West Konawa field: Davis 2 Jones, SW NE SW 34-6-5, pumped 50 bbl., T.D. 2,340 ft., shot 2,213 ft.

OKLAHOMA DRILLING REPORT

Caddo County

Ray Stephens 1 Lankford ..... SE SE NW 6-6-9w
Drilling 4,006 ft.

Comanche County

Hilton Phillips 1 Reick ..... NW NW SW 29-4-10w
Core 2,887-2,901 ft., black sandy shale, T.D. 2,901 ft., S.D.

Hughes County

Ed Scruggs 2 Black ..... NW NE NE 13-9-10
Booch 2,179 ft., T.D. 2,182 ft., est. 1,500,000 cu. ft. gas.

Don Feagin 1 Fulks ..... NE NW SW 8-9-11
Drilling 2,940 ft.

Magnolia 1 McKoy ..... SW SW SE 16-5-11
Lost circulation at 5,490 ft., T.D.

Jefferson County

Danciger 1 Hefner ..... SE cor. 3-4s-4w
Drilling 1,270 ft.

Johnson Drlg. 1 Bound ..... SW cor. 13-6s-6w
Drilling 1,405 ft.

Kay County

Union Nat. 1 Long (old T.D. 1,670 ft.) ... NW cor. 29-28-1
Drilling 2,663 ft.

Kiowa County

Dempsey & Son 1-A Dempsey ..... NW SW NE 31-4-18w
Drilling 200 ft.

Logan County

I.T.I.O. 1 Cronkite ..... NE NE NW 22-15-4w
Drilling 4,300 ft.

Big Chief & Ellison 1 Strange ... C SW SE 27-18-4w
T.D. 5,127 ft., 7-in. 4,318 ft., to test Avant.

Muskogee County

Storm Feltz 1 Moore ..... NW SE SE 4-14-17
Drilling 775 ft.

Noble County

Adams et al 1 Albright ..... SW SW SE 31-23-2w
Drilling 665 ft.

Okfuskee County

Portable Drlg. 1-A Nelson ..... NE SE SW 1-11-9
T.D. 4,108 ft., blew 7-in. out of hole, S.D.

Fred Coogan 1 Davis ..... SW SE NE 20-11-9
Booch 2,990 ft., Gilcrease 3,131 ft., show oil, drilling 3,515 ft.

Henry Oil 1 Dudgeon ..... NE SW SE 36-12-9
Oswego 1,290 ft., Prue 1,370 ft., coring 3,080 ft.

Car Lyon Oil 1 Davis ..... SE cor. 24-14-18
Show oil at T.D. 1,175 ft.

W. J. Curn 1 Harrisk ..... SE SE NE 34-14-18
Drilling 775 ft.

Oklahoma County

Harper-Turner 1 Harper ..... NW NW SW 17-14-2w
Drilling 3,920 ft.

Pawnee County

Alma Oil 1-A Hill ..... C N½ NW SW 1-21-5
Drilling 855 ft.

Payne County

Roy Starr 1 State ..... C W½ SW SW 16-20-2
Upper Layton 3,248 ft., Oswego 3,916 ft., drilling 4,545 ft.

J. E. Crosbie 1 Moore ..... NE NE NW 29-19-2
Drilling 3,645 ft.

Heimerich & Payne 1 Freeman ..... NW NW SW 2-17-2
Base Mississippi 4,556 ft., Hunton 4,597 ft., Viola 4,728 ft., T.D. 4,805 ft.

Pontotoc County

Simpson-Roodhouse 1 Montpeiler ... SW SW NW 20-2-6
Woodford 3,960 ft., drilling 3,695 ft.

Seminole County

Hilton Phillips 1 Thorne ..... NW NE NE 3-7-5
Earlsboro 3,525 ft., base Pennsylvanian 3,690 ft., Mayes 4,100 ft., Woodford 4,200 ft., Hunton 4,353 ft., Viola 4,500 ft., first Wilcox 4,617 ft., drilling 4,631 ft.

Alma Oil 1 Borden ..... NE SE NW 4-8-8
Mayes 3,880 ft., drilling 3,930 ft.

Tillman County

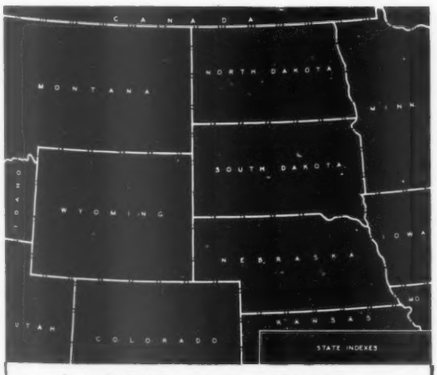
Price et al 1 Crow ..... NW NW NE 24-2s-15w
Drilling 1,050 ft.

Woods County

Gulf 1 Hess ..... C NE NW 33-23-13w
Lower Layton 5,740 ft., Oswego 6,150 ft., Chester 6,570 ft., drilling 7,030 ft.

Leasing in Panhandle

The dust-bowl area of the Texas and Oklahoma panhandles, the southeastern corner of Colorado, and the northwestern corner of New Mexico has been undergoing a lease play during the past few months which has already resulted in the staking of one deep wildcat test. It is reported that approximately a million acres have been leased in the dust-bowl area and that activity is still going ahead. Leases have been taken in Dallam, Sherman, Hansford, Ochiltree, Meade, Morton, Stevens, and even Seward County in southwestern Kansas. Baca County, in Southeast Colorado, and Union County in northeastern New Mexico have had leases taken.



MAP OF THE ROCKY MTN. AREA

SHOWS: Oil fields in green, gas fields in red. State indexes giving official field names and location on map, Townships, Ranges, Counties and County Seats. Above sketch shows area covered by map.

Size: 54" x 60". Scale 1" = 16 miles.
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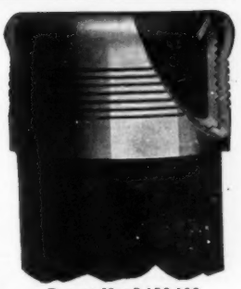

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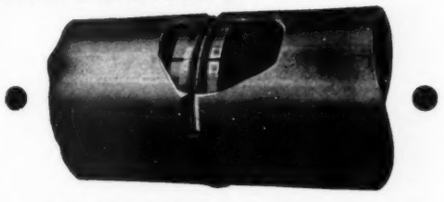

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THE OIL AND GAS JOURNAL

Deep Tests in South Ohio Take Interest From Northeast Area

By STAFF CORRESPONDENT

NEWARK, Ohio, Dec. 9.—Completions in the Ohio fields increased over the previous week, 39 tests being reported, consisting of 20 gas wells, 8 oil wells, and 11 dry holes. The best well was Preston and Ohio Fuel 1 Mary Fisher in Muskingum County which made 67 bbl. oil and 1,000,000 cu. ft. of gas. Upham 1 John Frye, a gas well in Knox County, made 3,500,000 cu. ft. of gas from the Clinton at 2,794 ft.

Magnolia 1 Breley Brothers, in Ashtabula County, and Benedum-Trees 1 W. C. White in Geauga County, were officially reported dry in the Clinton at 3,341 ft.

SUMMARY OF COMPLETIONS

Ohio

	No.	Prod.	Footage
Oil wells	8	*126	7,215
Gas wells	20	†11.3	45,157
Dry holes	11	.....	27,978
Total	39	.....	80,350

Western Kentucky

Oil wells	3	*177	3,394
Dry holes	2	.....	1,943
Total	5	.....	5,337

Indiana

Oil wells	4	*322	9,476
Dry holes	2	.....	2,700
Total	6	.....	12,176

*Barrels. †Million cu. ft.

and 3,938 ft., respectively. The deep play is passing to the south as the St. Peter test by McCloy, Inc., in Jersey Township, Licking County, reports drilling in dolomitic lime at 3,990 ft., 670 ft. below the top of the Trenton. In Columbiana County Natural Gas Co. of West Virginia is drilling a deep test on the William Tice farm, Section 19, Wayne Township, which is scheduled for the Oriskany sand. It is now 4,100 ft. deep. In Belmont County its test is scheduled for the Clinton sand on the E. A. Mobley farm, Section 19, Smith Township, is drilling at 6,670 ft.

Ashtabula County

Harpersfield Township: Magnolia 1 Breley Brothers, Lot 43, dry, Clinton 3,065-75 ft. and 3,105-53 ft., T.D. 3,341 ft.

Athens County

Ames Township: Orndoff 1 J. W. Lafottett, Sec. 33. 60,000 cu. ft. gas, shot, second Berea, T.D. 1,280 ft.
Athens Township: O'Mara 2 Continental Coal Co., Lot 172, 40,000 cu. ft. gas, shot, stray (Berea dry), T.D. 1,110 ft.
Rome Township: Leeper et al 11 J. H. Cunningham, Sec. 29, 2 bbl., shot, first Cow Run, T.D. 456 ft.
Lodi Township: Cody 4 J. L. Jeffers, Fraction 17, dry, second Cow Run, T.D. 725 ft.

Coshocton County

Tiverton Township: Ohio Fuel 1 Charles W. Fox, Sec. 13, 300,000 cu. ft. gas, Clinton, T.D. 3,424 ft.

Fairfield County

Pleasant Township: City Natural 1 C. Newbauer, Sec. 29, 200,000 cu. ft. gas, Clinton, T.D. 2,150 ft.

Geauga County

Chester Township: Benedum-Trees 1 W. C. White, Lot 6, 35,000 cu. ft. gas, shot, Clinton 3,589-3,671 ft., plugged, T.D. 3,938 ft.

Holmes County

Knox Township: Lydic Co. 1 Wallace Bell, Lot 12, dry, Berea, T.D. 1,015 ft.
Monroe Township: Ohio Fuel 2 W. H. Perdue, Sec. 20, 100,000 cu. ft. gas, show oil in stray, shot, Clinton, T.D. 3,286 ft.
Ohio Fuel 2 Bertha Homer, Lot 6, second quarter, dry, Clinton, T.D. 3,389 ft.

Knox County

Butler Township: Upham Co. 1 John Frye, Lot 7, first quarter, 3,500,000 cu. ft. gas, Clinton, T.D. 2,794 ft.

Newark Field—Licking County

Mary Ann Township: Settles Oil Co. 1 Homer Thompson, fourth quarter, 12 bbl., shot, Berea, T.D. 620 ft.
Ohio Fuel 1 Charles Roe, Sec. 16, 115,000 cu. ft. gas, Clinton, T.D. 2,635 ft.
Newark Township: Ohio Fuel 1 J. H. Johnson, north part of first quarter, 1,100,000 cu. ft. gas, Clinton, T.D. 2,431 ft.
National Drlg. Co. 1 Pauline Heckleman, Lot 6, first quarter, dry, Clinton, T.D. 2,438 ft.
Madison Township: Bebout et al 3 Haratio Holtz, Lot 4, second quarter, 300,000 cu. ft. gas, Clinton, T.D. 2,729 ft.

Lorain County

Penfield Township: Ohio Fuel 2 L. M. Betts, Lot 17, Sec. 2, dry, Clinton, T.D. 2,570 ft.

Medina County

Chatham Township: R. C. Holmes et al 2 Grover J. Rumbaugh, Tr. 14, Lot 1, 25 bbl., Berea, T.D. 502 ft.
Marine Trust Co. 22-A Daniel Ross, Tr. 13, Lot 4, 5 bbl., Berea, T.D. 428 ft.
Marine Trust Co. 16-O Daniel Ross, input well, Berea, T.D. 465 ft.
Harrisville Township: Edson & Son 1 Bertha Anderson, Lot 3, 40,000 cu. ft. gas, shale (Berea dry), T.D. 515 ft.
A. R. Loop et al 1 Edward Burnham, Tr. 1, Lot 24, 5 bbl., Berea, T.D. 580 ft.
A. R. Loop et al 2 Edward Burnham, 5 bbl., Berea, T.D. 594 ft.
A. R. Loop et al 3 Edward Burnham, 5 bbl., Berea, T.D. 596 ft.

Meigs County

Rutland Township: Nelson 4 A. N. Bengel, Sec. 3, 75,000 cu. ft. gas, Maxon, T.D. 850 ft.

Monroe County

Bethel Township: Burkhart et al 2 S. M. Loughry, Sec. 5, 125,000 cu. ft. gas, lime and Squaw sands, T.D. 1,746 ft.
Seneca Township: Spangler et al 1 Mary McCort, Sec. 36, 70,000 cu. ft. gas, shot, Berea, T.D. 1,673 ft.

Muskingum County

Wayne Township: Preston and Ohio Fuel 1 Mary Fisher, Sec. 14, 67 bbl. and 1,000,000 cu. ft. gas, shot, Clinton 3,744-3,843 ft., T.D. 3,439 ft.
Arco Oil Co. 1 J. J. Frick, Sec. 4, 2,500,000 cu. ft. gas, Clinton, T.D. 3,779 ft.
Wittmer Co. 1 J. J. Frick, Sec. 4, 800,000 cu. ft. gas, shot, Clinton, T.D. 3,885 ft.

Perry County

Monroe Township: C. Z. Ruth 23 N. L. and C. M. Rodgers, NW Sec. 27, dry, Berea, T.D. 1,173 ft.
Pleasant Township: Allegheny 28 Elizabeth Berrisford, NW Sec. 33, dry, Berea, T.D. 1,126 ft.

Stark County

Lake Township: J. C. Steiner et al 1 A. Baughman, Sec. 5, dry, Clinton, T.D. 4,557 ft.

Summit County

Boston Township: Dempsey 1 Va. Land Bank, Lot 2, Sec. 1, 150,000 cu. ft., shot, Clinton, blew down to 40,000 cu. ft., plugged, T.D. 3,517 ft.

Tuscarawas County

Fairfield Township: East Ohio 1 William P. Gintz, Sec. 14, 630,000 cu. ft., shot, Clinton 4,986-5,044 ft., T.D. 5,155 ft.

Washington County

Barlow Township: Porter 2 Laura Hardy, Sec. 7, 200,000 cu. ft. gas, Maxon, T.D. 1,386 ft.
Liberty Township: Heldman 4 Mae Mossburg, Sec. 21, 100,000 cu. ft. gas, Germantown sand, T.D. 1,012 ft.
Ludlow Township: J. T. Hall et al 2 Henry E. Hall, Sec. 28, Sackett Run, 43,000 cu. ft. gas, Berea, T.D. 2,117 ft.

WESTERN KENTUCKY

OWENSBORO, Ky., Dec. 9.—Three oil wells and two dry holes were completed in western Kentucky during the past week.

Daviess County

Handyville district: Stewart & Snyder 9 Anna Ezell, 142 bbl., 140-qt. shot, Jett sand 1,263-84 ft., T.D. 1,287 ft.
Utica district: Sam Malis 1 R. Y. Cravens, location.
Maceo district: Jess Ashby et al 2 Mrs. M. Dixon, drilling at 250 ft.

Hancock County

Saunders School district: Fordsville Oil Co. 3 Ralph Ashworth, dry through Jett sand, T.D. 447 ft.
Lyonia district: McDonough & Co. 1 Barker, moving in.

McLean County

South Livermore district: Matthews & Preston 6 Hollis Howell, 25 bbl., 60-qt. shot, Barlow sand 1,400-16 ft., 60-qt. shot Bethel sand 1,441-57 ft.
Knobs district: C. F. Kimmel et al 3 D. H. Davis, drilling at 150 ft.
Glenville district: Ohio 1 G. B. McManama (Acct. 2) 1, rigging up to deepen to McClosky.
Ohio 6 G. B. and R. L. McManama, drilling deeper to McClosky.

Ohio County

Friendship Church district: J. A. McGowan 2 J. T. Edge, 10 bbl., 30-qt. shot, Barlow sand 643-50 ft.
Henry Scholl 6 Elmer Royal, drilling at 400 ft.
Adaburg district: H. L. Stoltz et al 5 J. A. Sapp heirs, moving in.

Webster County

Sebree district: Snowden & McSweeney 2 G. A. Sutton, dry through McClosky, T.D. 1,496 ft.

INDIANA

EVANSVILLE, Ind., Dec. 9.—There was less activity than usual in Indiana as only six wells were completed. Of these four were producers and two were dry holes. One of the failures was in the newly discovered Vincennes pool.

INDIANA COMPLETIONS

Gibson County

Hall Edwards 8-A Maier ..... NE SW NW 13-2s-14w
Flowed 115 bbl., Cypress 2,525-40 ft.
Hall Edwards 14-C Maier ..... NE NW SE 14-3s-14w
Pumped 160 bbl., 3,000 gal. acid, McClosky 2,850-63 ft.

Jackson County

J. W. Pearson 1 Turkhorn ..... SW NE SW 6-4n-5e
Spudded and abandoned.

Knox County

W. C. McBride 2 Metropolitan Life ..... SW SW NE 24-2n-11w
Dry, McClosky 1,887-1,900 ft., swabbed 4 bbl. oil and 20 bbl. salt water after 2,000 gal. acid, P.B. to 1,895 ft., pumped salt water after 1,000 gal. acid.

Posey County

J. E. Crosby 7 Keck ..... SE NE 33-4s-14w
Pumped 22 bbl., Aux Vases 2,800-30 ft.

Spencer County

B. Hoouver, trustee, 1 G. E. Bullock NE SW NE 2-5s-6w
Pumped 25 bbl., 1,000 gal. acid, McClosky 1,218-43 ft.

Sullivan County

O. A. Thayer 1 Robbins ..... NE NW SE 8-7n-9w
Dry at 800 ft.

INDIANA DRILLING REPORT

Crawford County

J. C. Barnett 1 Baylor ..... SE SE SW 22-1s-2e
Drilling 530 ft.

Gibson County

Hyslop et al 1 fee ..... NW NE NW 20-1s-9w
Drilling 335 ft.
Oleum Pet. Co. 1 Bank ..... SE SE NW 5-2s-8w
Drilling 1,238 ft.

Greene County

L. B. Jackson et al 1 Holmes .. NW NW NW 22-7n-6w
Devonian 1,663 ft., drilling 1,716 ft.

Harrison County

Halbert & Schacklette 1 Wiseman..SW SW NE 25-5s-3e
Drilling 682 ft.

Knox County

Loma Oil 1 Sanneman ..... NW NW SE 24-2n-11w
Elev. 408 ft., Glen Dean 1,433 ft., Benoist 1,745 ft., Ste. Genevieve 1,796 ft., McClosky 1,859 ft., T.D. 1,900 ft., setting casing.
Midwest et al 1 Montgomery .. SW NW SW 12-2n-11w
Elev. 405 ft., Glen Dean 1,459 ft., Benoist 1,766 ft., Ste. Genevieve 1,805 ft., drilling 1,837 ft.

Martin County

Newton P. L. 1 Ash ..... NW NW SW 31-4n-4w
Cypress 310 ft., S.D. 312 ft.

Voth and T.C.U. Fields Steadily Develop

The T.C.U. and the Voth fields, both in Cooke County, North Texas, are steadily being developed, the former from a shallow Strawn sand and the latter from a locally shallow occurring section of the Ellenburger lime of Ordovician. Both of these areas were discovered in 1939, the Voth being opened in January and the T.C.U. field being found in July.

The Voth field, centering in the Fulton, the Lawson and the Matson surveys, was opened by Pearson-Whitfield-Grimes 2 Voth, which made 302 bbl. in 17 hours from saturation at 1,783-93 ft. As development continued in this field J. M. and W. O. Russell started a test a mile south of production seeking a major extension. Saturation was found in a lenticular Strawn sand from 1,125-43 ft. and the well was completed for 109 bbl. daily.

Steady development then started in both areas, the main operators being Trumpter Petroleum Corp., Fort Worth; Monte Staniforth, Wichita Falls; Pearson-Whitfield-Grimes, Muenster, and several other local operators. Newest activity in the T.C.U. field is on the south side where Dickson Oil Co. has completed its 5 Lynn, J. D. Lynn Survey, and is preparing to start 6 and 7 Lynn. On the north end of the Voth field Humble Oil & Refining Co. is developing the Hellman lease, the No. 4 being recently completed and the Nos. 5 and 6 being readied for drilling.

Both fields are on the crest of the Muenster arch, thus accounting for the shallow occurrence of the Ellenburger lime which is 6,000 ft. deep 30 miles to the west and in Montague County.

By GEORGE WEBER

Deep Wildcats at Athens and Lisbon Ready for Tests

SHREVEPORT, Dec. 9.—The deep oil and gas possibilities in the Cotton Valley and Hosston (Travis Peak) formations are still problematical as two tests are at the testing stage, having encountered shows of oil or gas in the two formations.

The Athens prospect, Skelly & Sunray 1 Valentine, located southeast of the Homer field, Claiborne Parish, showed disappointing results to those who expected oil shows last week. The wildcat was drilled to a total depth of 6,507 ft. late in September, and after running Schlumberger and setting 5½-in. casing at total depth, was shut down for title work until last week.

By that time, the two operators had purchased interests in the well from V. A. Hardin, who drilled it with aid from several major oil companies and other interested parties. The Schlumberger showed a porous sand at 6,157-70 ft., an asphaltic sand at 6,213-31 ft. and another sand body at 6,317-32 ft.; all in the Hosston formation, which was topped at 5,992 ft.

Last week casing was perforated at 6,317-32 ft. in the deepest prospective horizon, and the well tested an estimated 25,000,000 cu. ft. of gas, reported as dry, although there is belief that it will produce some condensate. The perforations have been squeezed and the lower section of the sand body will be reperforated in an effort to determine whether any oil sand underlies the gas.

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
North Louisiana			
Oil wells: Caddo	7	*302	9,833
Olla	7	*1,250	16,860
Cotton Valley	1	*156	8,587
Gas wells: Monroe	1	†2.0	2,193
Wildcats	1	†3.4	2,551
Dry holes: Monroe	1	.....	2,331
Wildcats	4	.....	12,310
Total	22	.....	54,665
Arkansas			
Oil wells: Fields	3	*938	19,470
Dry holes: Fields	1	.....	3,045
Wildcats	1	.....	619
Total	5	.....	23,134
Recompletions	1	.....	.....
East Texas Border			
Dry holes: Wildcats	1	.....	3,480

Lisbon Test

J. D. Caruthers, Tr. 1 Simmons Unit, important deep Lisbon well, last week encountered another sand section showing gas below 8,900 ft., and was drilled to a total depth of 9,016 ft., specified in the contract. A Schlumberger survey was run and 6-in. casing is being run to total depth.

There is a possibility that the test may be drilled deeper, through the 6-in., to 9,250 or 9,300 ft., to a coquina lime showing oil in the Union Producing Co. 1-A Meadows, deep test north of Lisbon. The original consideration of carrying the original hole that deep was dropped this week, however, and testing will begin at 8,850 ft. The deepest sand section cored last week below 8,900 ft. did not appear good enough on the electrical log to test.

Several sand bodies in the Cotton Valley and overlying Hosston formations have been encountered in the deep Caruthers test, and the shooting and testing of these sands will consume several days during which the test will probably hold prime interest in the area. In general, sands of the deep formations appeared to have thickened considerably in the current test, from their character in the Lisbon Exploration Co. 1 Vaughn, located two miles to the northeast. In addition, porosity has increased to the southwest, as comparisons among the Union Producing Co. 1-A Meadows, Lisbon Exploration 1 Vaughn and Caruthers 1 Simmons reveal. The Union test, deepest current drilling operation in North Louisiana, is coring below 10,158 ft., having encountered a show of oil several weeks ago in coquina lime at 8,954-67 ft. The Union test is running much higher than either the Vaughn 1 or Simmons 1, but the sands appear to thin and become tight on top of structure.

Greenwood Well Completed

The Delta Drilling Co. 1 Dunn, western Caddo Parish wildcat which discovered shallow gas near the town of Greenwood, was completed through the drillstem test last week for an initial gage of 10,000,000 cu. ft of gas daily. The test blew out last month after encountering a sand at 2,543-51 ft. total depth. Drillstem was cemented in the hole, and it is expected that the potential of the well would be approximately double its present gage, had it been completed normally. A second test is expected in the field shortly.

Olla Activity

The Olla field, recovering from high water, registered seven completions last week, with no decline evident in drilling activity. Failures in Franklin and Grant Parish wildcats have failed to deter the wildcatting in the section, directed into the Wilcox, from which the Olla, Nebo, Summerville and Standard fields produce oil or gas.

The Delta Drilling Co. 1 Hughes, located about six miles northwest of the Nebo field, reports a show of gas, after topping the Wilcox at 2,115 ft. and shutting down at total depth of 4,002 ft. Another test, the Hunter Co.'s 1 Pipes, has spudded on location a few miles east of the Delta wildcat.

NORTH LOUISIANA COMPLETIONS

Wildcat—Bienville Parish

R. W. Burnett 1 Waits ..... SE SE SW 4-15-10
Dry T.D. 2,843 ft.

Caddo—Caddo Parish

J. W. Bailey 1 Muslow ..... SE NE SW 32-21-15
Pumping 40 bbl., T.D. 1,537 ft., 6⅝-in. casing, 1,375 ft., 4,000 gal. acid.
Gulf 13 Herndon ..... SW NE SE 15-21-15
Pumping 75 bbl., T.D. 1,697 ft. 6-in. casing, 1,533 ft., 4,000 gal. acid.
A. R. Hancock 12 Louark fee ..... SW NE NE 18-21-15
Pumping 10 bbl., T.D. 1,042 ft., 7-in. casing, 1,038 ft.
Lydia Johnson 1 LaVine-Murray ..... NW NE NE 12-20-16
Pumping 10 bbl., T.D. 1,538 ft. 5½-in. casing, 1,390 ft.
Renwick & Wickizer 2 Stiles ..... SE SE NE 17-20-16
Pumping 75 bbl., T.D. 1,012 ft., 5½-in. casing, 1,004 ft.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Dec. 7	Nov. 30
Caddo light	5,960	5,950
Caddo heavy	2,340	2,240
Cotton Valley	13,320	13,235
Cross Lake	3,475	3,210
De Soto and Red River	1,020	1,025
Haynesville	2,630	2,615
Homer	2,685	2,775
Lisbon	3,050	3,040
Olla	7,900	7,260
Rodessa	16,915	16,605
Sligo	2,410	1,170
Urania	2,325	2,325
Zwolle	1,395	1,460
Rodessa, Texas	12,285	14,155
North Louisiana	68,680	68,460

SOUTH ARKANSAS

Atlanta	2,450	2,475
Buckner	2,035	2,025
Champagnolle	1,165	1,130
Dorcheat	1,325	1,350
El Dorado	1,635	1,640
Magnolia	19,500	19,650
Nick Springs	1,000	...
Rodessa	1,700	1,700
Schuler	16,400	16,600
Smackover light	1,560	1,600
Smackover heavy	13,600	13,575
Troy	1,120	1,125
Urbana	1,550	1,800
Village	950	...
South Arkansas	68,705	68,670

Louisiana Oil Prod. Co. 6-D Muslow ..... NE NW SE 5-20-15
Pumping 40 bbl., T.D. 1,507 ft. 7-in. casing, 1,370 ft., 4,000 gal. acid.
Texas Co. 7 Heilperin ..... NW SE NW 28-21-15
Pumping 52 bbl. oil, 20 bbl. salt water, T.D. 1,500 ft., 6⅝-in. casing, 1,375 ft., 4,000 gal. acid.

Greenwood—Caddo Parish

Delta Drlg. Co. 1 Dunn ..... NW NE NW 24-17-16
3,354,000 cu. ft. gas, ¾-in. choke, T.P. 242 lb., C.P. 918 lb., R.P. 1,046 lb., T.D. 2,551 ft., gas sand, 2,543-51 ft.

Wildcat—Franklin Parish

H. L. Hunt 3 Chicago Mill & Lbr. Co. ..... SW SE 35-14-9e
T.D. 5,413 ft., dry.

Wildcat—Grant Parish

Gholson & Hodge 1 Eberlee ..... NE NE 16-7-1e
T.D. 4,017 ft., dry, top Wilcox 2,557 ft.
Speir & Nance 1 Armstrong ..... SW NE NE 27-9n-1e
Abandoned, will not drill, 10-in. casing, 37 ft., T.D.

Olla—La Salle Parish

Ark. Fuel Oil 1-B Hopkins Unit ..... SW NE 12-10-2e
Heading 100 bbl., open tubing, C.P. 200 lb. 7-in. casing, 2,258 ft., T.D. 2,350 ft., perf. lower Central sand 2,221-27 ft.
Placid 56 La. Central ..... NW NE 35-10-2
240 bbl., 5% salt water, 10/64-in. choke, T.P. 160 lb., C.P. 360 lb., T.D. 2,403 ft., 7-in. casing, 2,399 ft., perf. lower Central sand 2,240-46 ft.
Placid 60 La Central ..... SW NE 2-9-2
120 bbl., 6% salt water, 22-64/in. choke, T.P. 100 lb., C.P. 420 lb., T.D. 2,435 ft., 7-in. casing, 2,435 ft., perf. lower Central sand 2,251-58 ft.
Placid 61 La. Central ..... NW NE 2-9-2
210 bbl., 30% salt water, 12/64-in. choke, T.P. 300 lb., C.P. 1,000 lb., T.D. 2,427 ft., 7-in. casing, 2,427 ft., perf. 2,410-14 ft. oil 29.7 gravity.
Placid 67 La. Central ..... SE SW 36-10-2
96 bbl., 14% salt water, 21/64-in. choke, T.P. 25 lb., C.P. 300 lb., T.D. 2,454 ft., 7-in. casing, 2,454 ft., perf. 2,234-40 ft., lower Central sand.
Placid 71 La. Central ..... SE NW 30-10-3
350 bbl., 8% salt water, 18/64-in. choke, T.P. 150 lb., C.P. 450 lb., T.D. 2,378 ft., 7-in. casing, 2,378 ft., perf 2,240-47 ft., Cruse sand.
Placid 75 La. Central ..... SW NE 24-10-2e
134 bbl., 6% salt water, 13/64-in. choke, T.P. 120 lb., C.P. 220 lb., T.D. 2,413 ft., 7-in. casing, 2,412 ft. perf. 2,242-50 ft., Cruse sand.

Monroe—Morehouse Parish

Hope Prod. Co. 1 Bentley ..... NW SW 2-21-5e
T.D. 2,331 ft., dry.

Monroe—Union Parish

Nemours Corp. 1 Edwards ..... NW SE 36-22-3e
T.D. 2,193 ft., 2,000,000 cu. ft. gas, R.P. 970 lb., 6-in. casing, 2,113 ft.

Cotton Valley—Webster Parish

Hunt Oil Co. 2 Crawford ..... S½ S½ 30-21-10
156 bbl., ¾-in. choke, T.P. 1,600 lb., C.P. 1,800 lb., T.D. 8,587 ft., 7-in. casing, 8,585 ft., perf. 8,413-27 ft. "D" oil sand.

NORTH LOUISIANA DRILLING REPORT

Bienville Parish

R. W. Burnett 1 Locke ..... NE NW NE 9-15-10
First report.

Bossier Parish

R. L. Reese et al 1 Bellevue Land Co. ..... SW SW NE 27-20-11
S.D. 3,035 ft.

Caddo Parish

W. G. Ray Drlg. Co. 1 Noel Est. ..... C SE 30-21-14
Drilling lime and shale 3,303 ft.

Caldwell Parish

Gholson & Hodge 1 La. Central ..... NW NE 35-12-3e
Set 10¾-in. casing, 296 ft., top Wilcox 1,580 ft., T.D. 2,125 ft., S.D., rig repair.

Catahoula Parish

Smith Bros. 1 Cernick ..... NW SW 29-11-8e
First report.

Claiborne Parish

J. D. Caruthers, Tr. 1 Simmons Unit ..... N½ SW 2-20-5w
(Deep Lisbon), T.D. 9,016 ft., ran Schlumberger, running 6-in. casing to T.D., will perf. and test.
Skelly & Sunray (former V. A. Hardin) 1 Valentine ..... NW NW 31-20-6w
T.D. 6,507 ft., drilled out to 6,363 ft., perf. 6 317-32 ft., tested estimated 25,000,000 cu. ft. gas, no oil, squeezed and prep. reperf.
Union Producing Co. 1-A T. D. Meadows et al ..... C NE 18-21-4
Casing 10,158 ft.

De Soto Parish

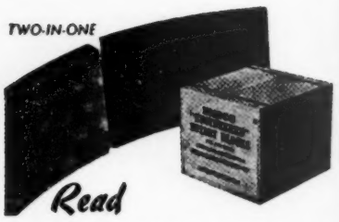
J. E. Stack et al 1 Cook ..... NW NE 32-13-14
S.D. 660 ft.

La Salle Parish

Delta Drlg. Co. 1 Hughes ..... NE NE SW 22-8-1e
T.D. 4,002 ft., reported show gas, S.D., W.O.
Sinclair Prairie Oil Co. 1 Goodpine ..... NE SE 28-9-3e
Rigging up.

(Continued on Page 90)

TWO-IN-ONE



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Among the Drilling

FALCON-SEABOARD Drilling Co., Houston, Tex., is nearing the expected pay horizon in Gulf 1-R State, located in the Red Fish Reef field, offshore from Chambers County, Texas, in Galveston Bay. One rotary is located in Cameron County, Texas, for Pure Oil Co. In the Louisiana Gulf district, two rotaries are running for Gulf Refining Co. and Barnsdall Oil Co. in the Ville Platte and Iowa fields.

CRON & GRACEY, Houston, Tex., are preparing to start drilling operations on a projected deep wildcat located in the Grassy Lake area, Assumption Parish, coastal Louisiana. In the same district, and located in the Lake Long field, La Fourche Parish, contract was received from Fohs Oil Co. for another well, while in Schooner Bayou field, one rotary is running for Union Oil Co. of California.

EDWARDS Drilling Co., Houston, Tex., is starting a new operation in the Old Ocean field, Brazoria County, Texas, for Harrison & Abercrombie. Testing continues at Gulfboard Oil Co. 1 State, a prospective pool opener located offshore from Aransas County in Aransas Bay, while in the Esperson field, Liberty County, Texas Gulf Coast, one rotary is running for W. P. Luse.

CROSBY Drilling Co., Houston, Tex., received contract from Stake Petroleum Co., Inc., for a projected 9,500-ft. wildcat to be drilled about 3 miles southwest of the Alta Loma field, Galveston County, Texas. The well is located on the Lena Griffith lease in the H. P. Cayce Survey.

McDANNALD Oil Co., Houston, Tex., is moving in material for 1 Foster Lumber Co., a projected Wilcox test located in the Cold Springs area, San Jacinto County, Texas. Contract depth is 8,000 ft.

McQUEEN & CLEVENGER Drilling Co., Fort Worth, Tex., received contracts on two of the six recently announced tests by Gulf Oil Corp. in the Goldsmith field of Ector County, West Texas. All of the tests are in Block 44, Township 1s, T.&P. Survey. The company will drill 327 Goldsmith, 2,217 ft. from the north and 440 ft. from the east lines of Section 18, and 330 Goldsmith, 1,329 ft. from the north and 2,225 ft. from the east lines of Section 20. BASS & DILLARD Drilling Co., Wichita Falls, Tex., received contracts for two of the tests by Gulf. They were 328 Goldsmith, 2,218 ft. from the east and 440 ft. from the south lines of Section 7, and 331 Goldsmith, 1,329 ft. from the north and 1,275 ft. from the west lines of Section 20. GARDNER BROS. Drilling Co., Dallas, Tex., will drill 329 Goldsmith, 2,216 ft. from the north and 1,324 ft. from the west lines of Section 15, and W. J. WALSH Drilling Co., Odessa, Tex., will drill 326 Goldsmith, 1,328 ft. from the south and 2,224 ft. from the west lines of Section 17.

GLEN HARROUN, Laredo, Tex., is drilling below 1,200 ft. at Jay Simmons et al 1-A J. M. Gutierrez, a wildcat located about 5½ miles southwest of Randado, Tex., in Block 2, Survey 144.

HOUSTON Drilling Co., Houston, Tex., is preparing to spud a new wildcat test in Jackson County, Texas, for Stewart Boyle and John Mayo located about 9 miles north of Edna in the William Murphy Survey. Contract depth is 6,000 ft.

TRINITY Drillers, Inc., San Antonio, Tex., is preparing to test F. A. Gillespie & Son 1 Dabney, located about 3 miles southeast of Banquette, and 2 miles east of the Agua Dulce field, Nueces County, Southwest Texas. Casing was cemented for completion after a gas and distillate odor was logged at 7,205-20 ft. In the newly opened Willamar field, Willacy County, Texas, drilling was scheduled to get underway on another test for Pan American Production Co., a southeast offset to the discovery well.

H. H. HARRELL, Shreveport, La., is moving a rotary to the Bammell field, Harris County, Texas Gulf Coast, where location was recently staked for his 1-B Graves, located on the east side of the field and south of gas-distillate production.

HENDERSON COQUAT is moving in material for his 1 A. P. Beshears, a Wilcox test located in the J. S. Loving Survey, Atascosa County, Texas. The well is scheduled to be drilled to a depth of 5,800 ft.

A. Z. SKEETERS, Kilgore, Tex., who recently received contract for deepening an old failure in Hopkins County, eastern Texas, has cleaned the old hole out and is drilling ahead in new hole below 4,477 ft. It is the old W. P. Vaughn 1 Chapman, now the L. A. Rankin 1 Chapman, in the Hopkins County School Lands Survey, about 1 mile north of Tira and 11 miles northwest of the Sulfur Bluff field. The old total depth was 4,064

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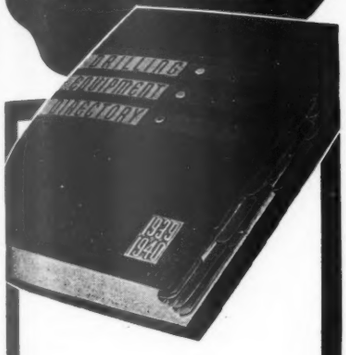

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ft. with the Paluxy having been topped at 3,934 ft.

MARTIN & HAWKINS, drilling contractors of Centralia, Ill., have contracted to drill the W. O. Allen 1 Palmertree, a 3,750-ft. Montgomery County wildcat, Mississippi.

PHIL CULBERTSON Drilling Co., Joplin, Mo., is drilling shallow gas tests for H. L. Scott west of Polo, in Caldwell County, Missouri. He is the second contractor operating in the field. The other is Robert Wells & Sons, Richmond, Mo.

RYAN & ANDERSON of Jackson, Miss., will drill the 1 Chancellor, a Winston County, Mississippi, wildcat for Frame & Young.

EDWIN M. JONES, San Antonio, Tex., opened a new Wilcox pool in Live Oak County, Texas, with the completion of No. 1-B George West, 2½ miles west of the town of George West.

DRILLING & EXPLORATION CO., of Los Angeles, Calif., at last reports was gun-perforating above 10,440 ft. at Lloyd Corp. 5 Lloyd, a wildcat being drilled in 24-4s-23w, Ventura Avenue district of Ventura County, California. Total depth of the test is 10,475 ft. in oil sand. At 8,526-8,630 ft., a formation test through perforations resulted in a flow of 10 bbl. per hour for 4 hours and died.

RICHMOND Drilling Co., Midland, Tex., together with C. O. Collins, Fort Worth, has completed a well in the extreme southern part of the North Cowden field of Ector County, West Texas. It is 1 Smith, Section 14, Block 43, Township 1s, T.&P. Survey. The well made 1,968 bbl. of oil daily, shot with 675 qt. from 4,087-4,195 ft.

MAX SPIDEL, drilling contractor and operator of Allegan, Mich., is preparing to complete an indicated 400-bbl.-per-day flowing well for Paul R. Hardy in Trowbridge Township, Allegan County, Michigan. The well is Hardy 1 Bridgeman, in NE SE NW 29-1n-13w, and was reported to be flowing an average of 20 bbl. per hour after acid. Top of the Traverse lime was called at 1,371 ft. and hole was bottomed at 1,375 ft. The well is continuing to test.

LUPHER Drilling Co., Mount Pleasant, Mich., has spudded Pure Oil Co. 1 Swindlehurst in C E½ NE NW 32-20n-6w, Clare County, Michigan, as a diagonal southwest offset to Rowmor Corp. 1 Wyman in the new producing area of Winterfield Township. The test is 1,320 ft. south and 660 ft. west of the 1 Wyman. Pure Oil Co. 1 Payne, in C N½ NW SE 35-20n-6w, also contracted to Lupher, was dry at a total depth of 3,812 ft.

HAWKINS & HOLCOMBE, drilling contractors of Wichita Falls, Tex., have moved in cable tools to drill a 2,300-ft. wildcat for Ray Brothers et al, 17 miles southwest of Vernon, Wilbarger County, North Texas. The test will be 1 Henry Streit, in the southeast corner of the west 72 acres of the S. N. Gosnell Survey.

WHISENANT & TRENCHARD, Evansville, Ind., have moved in materials for a wildcat in Posey County, Indiana, south of the New Harmony pool. The test will be Illinois Production Corp. 1 John Larken, NE NE SW 17-6s-14w, and will test the McClosky. The contractors also found the McClosky dry at 2,000 ft. in Bell Brothers 1 Maurice Stangle. Located in NW NW NE 23-2n-11w, the test was drilled to extend the Vincennes pool of Knox County, Indiana, to the north and west.

SHERROD & GREEN, drilling contractors of Kansas City, Mo., at the week end was drilling below 915 ft. at J. A. Crowley, trustee, 1 Green in Jefferson County, Kansas. The wildcat, located in SW SW NW 9-11-19, was started by Helm & Davis but was taken over by a group of investors and Mr. Crowley, of Sioux Falls, S. D., appointed trustee.

TAFT Well Drilling Co. is drilling below 2,550 ft. at Standard Oil Co. of California 1 Tippetts in the Rumsey Hills district of Yolo County, California. Surface pipe (13⅜-in.) was cemented at 1,104 ft. The wildcat is located in 9-12n-3w, on the structure formerly known as Nigger Heaven dome.

BELL & LOFFLAND at last reports was drilling in sand and shale at 2,360 ft. at Independent Exploration Co. 1 Unit Plan, a wildcat located in 19-7n-6e, in the Sacramento district of Sacramento County, California. The company has 6,500 acres under lease and the test is being drilled on assumption that the same geological section is present in this area as that from which production is obtained in the Coalinga area.

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By

T. R. INGRAM

Extend Hiawatha Gas Field North; Plan Important Tests

DENVER, Colo., Dec. 9.—Rocky Mountain area had eight completions of which two were oil wells, three were gas wells, and three were dry holes. Seven new operations were reported.

An extension of the Hiawatha gas field a mile to the north took place on the Wyoming side in Vermillion Oil Co. 1 Horrocks for 2,500,000 cu. ft. a day. Red Desert Corp. 1 Aspden, a wildcat in the North Baxter Basin district, had water in the Tensleep at 6,302 ft. and was abandoned. Osage had a dry hole in C. L. Foster No. 3.

Cut Bank had one completion in William Hanlon 5 Allotted-128 for 110 bbl. Montana-Dakota Utilities had two gas wells in Nos. 616 and 617 in Bowdoin field for 686,000 and 857,000 cu. ft., at 1,050 and 1,040 ft., total depths. Kevin-Sunburst had one completion in Morton Oil & Refining Co. 9 Morton for 100 bbl. a day. Texas Co. Absarokee test, Stillwater County, was dry and abandoned.

New operations included a rotary test on Bailey dome, Carbon County, Wyoming, by Robinson & McDonnell, three new operations for Sinclair-Wyoming, one in Mahoney dome, and two at Wertz. Klumpe Syndicate will drill an outpost on west side of La Barge field. Cut Bank had one new operation.

SUMMARY OF COMPLETIONS

Wyoming

	No.	Prod.	Footage
Gas wells	1	†2.5	3,504
Dry holes	2	.....	7,093
Total completions	3	.....	10,597

Montana

Oil wells	2	*210	4,439
Gas wells	2	†1.5	2,090
Dry holes	1	....	7,116
Total completions	5	.....	13,645

*Barrels. †Million cu. ft.

COLORADO

Archuleta County

Kendrick Dev. Co. 1 fee.....SE NE SW 36-35n-2w
T.D. 865 ft., fishing for bit.
California-Colorado Oil 2 Macht NE SW NW 32-36n-1w
S.D. 1,100 ft., account of weather.

Boulder County

J. A. Warren 3 Maxwell.....NW NE NW 24-1n-71w
T.D. 975 ft., running 5⅛-in. to bottom.

Fremont County

U-Tex Oil 1 Hassler.....NE 28-20s-69w
T.D. 2,700 ft., set 5⅛-in. on bottom.

Garfield County

Joe T. Juhan 1 Clough.....C NW SE 22-6s-94w
S.D. 520 ft., in Wasatch, account of weather.

La Plata County

Nick Spatter 1-X Bryce.....SW SW 31-33n-9w
Cemented off caves at 4,390 ft., building heavier rig to test Pennsylvanian, will move light rig to new location to go to gas sands at 1,250 ft. and 2,150 ft.

Larimer County

E. P. Gallup 1 Hanson..... C SE NW 36-10n-71w
Drilling below 300 ft., and lowering pipe to shut off water and sufficient gas to clear hole after building up head.

Las Animas County

Barney Oil Corp. 1 Dutto-Marchisio, Garcia district, formerly H. G. Stevenson, will test all horizons down to the top of the Pennsylvanian and will carry the 10¾-in. through the Dakota. Location is on a nose of the structure 2 miles west of nearest well drilled on the dome. Garcia is producing some gas at shallow depths which is run to the Mountain States gasoline plant. Dakota is the lowest horizon so far tested in the area.

Barney Oil Corp. 1 Dutto-Marchisio ..... NW NW 32-33n-62w
Drilling below 200 ft., show gas at 185 ft.

Logan County

West Plains 1 Sheldon.....SE NW SW 3-10n-55w
Drilling 3,240 ft.

Park County

South Park Oil 1 Lamar.....NE NE SE 34-11s-75w
Drilling 7,585 ft. in sand.

Rio Blanco County

Another Pennsylvanian test is scheduled to be drilled in Rio Blanco County next year as a result of a deal whereby the Saltmount Oil Co. acquired 4,500 acres covering a large part of the Meeker structure located 5 miles northeast of the town of that name and east of the Rangely field. The block was leased up by George Iles, of Denver, and turned to the Saltmount company. Agreement provides that drilling shall begin not later than September 15, 1941, but may start before that date. The structure is well known and has been looked upon with favor by several of the major companies. In 1924 the old Mariand Oil Co. drilled 1 Scott, NE SW 20-1n-96w, but at 1,990 ft., at the contact between the red beds and the Pennsylvanian, it ran into water under heavy pressure and was unable to shut it off on account of the condition of the hole. In 1930 Ohio Oil Co., after extensive geological work, leased up the structure and contracted to start a well the following summer, but due to the depression, drilling did not take place. It is estimated that all horizons down to the granite will be tested within 6,000 ft.

Texas-California 5 Unit .....NW NE NE 34-3n-94w
Drilling 1,327 ft.
Buford Oil 1 Government ..... SW SW 16-1n-91w
T.D. 4,387 ft., cemented 6⅝-in. at 4,200 ft.

WYOMING

Big Horn County

McDonald & Curtis 1 Orchard ....SE NW 24-51n-93w
Drilling 1,040 ft.

Campbell County

Continental Oil Co.-Texas-Gulf Production No. 1, NE SW SE 4-56n-69w, Rocky Point structure, cemented the 13⅜-in. at 318 ft. and shut down at 350 ft. for the winter.

Carbon County

Robinson & O'Donnell have let contract to Manning & Martin, Inc., for a rotary test on the Bailey dome, a local high on the line of folding upon which is located the Wertz, Mahoney, West Ferris, and Lost Soldier fields. The location is ½ mile north of a well drilled by the United States Petroleum Co. more than 20 years ago in the SE SE SW 16-26n-89w, which had shows of oil and gas in the Frontier at 3,248-3,550 ft. The gas caught fire and rig was destroyed and hole was damaged beyond repair.

Sinclair-Wyoming is going back into its 2-A Mahoney, which was completed in 1937 for 80 bbl. through the tubing from the Tensleep at 4,507 ft. and drill it deeper to the basal Tensleep.

Robinson & O'Donnell 1 State SW SW NE 16-26n-89w
Building rig, first report.
Sinclair-Wyoming 2-A Mahoney C SW NE 34-26n-88w
T.D. 4,507 ft., cleaning out at 4,497 ft. to drill deeper, top of Tensleep 4,287 ft.
Sinclair-Wyoming 18 Wertz ....SE SE NW 7-26n-89w
Cellar and pits, first report.
Sinclair-Wyoming 17 Wertz..... NE NE NW 7-26n-89w
Building rig, first report.
Sinclair-Wyoming 16-A Wertz .SW SW SW 6-26n-89w
Drilling 5,087 ft.
Ohio 2 Lundy ..... SE NE NW 34-20n-78w
Drilling 3,600 ft.
Sinclair-Wyoming 15-A Wertz . SW SW NE 7-26n-89w
Drilling 3,575 ft.

Crook County

Vickers-Continental 1 Duncan-Lobban NE NW SW 28-57n-64w
S.D. 2,007 ft. in red shale.
M. D. Miller 1 Commercial.....SW SE 19-49n-66w
Drilling below 650 ft.
Thatcher & Jay 1 ..... NW SE 10-49n-66w
T.D. 400 ft., fishing drill pipe, first report, Thornton district, slim rotary.

Natrona County

General Pet. 37-22-P.....NW SE SW 22-35n-77w
T.D. 4,576 ft., cemented 7-in. at 4,541 ft., rigging up pump, top Shannon 4,538 ft., top of saturation 4,545 ft.
Royal Oil Corp. 1 Midert.....SW SW SW 26-35n-80w
T.D. 1,555 ft., running 8-in. to 1,400 ft.

Niobrara County

Minnelusa Oil Corp. 4 Joss.....SW NE SW 6-35n-65w
Drilling 3,977 ft.
Continental 22 Tom Bell.....SE NW NW 34-36n-65w
Drilling 5,270 ft.
Continental 23 Tom Bell.....SE NW SW 34-36n-65w
T.D. 5,355 ft., cemented 7-in. at 5,288 ft.
Ohio 18 Lamb-Acct. 2.....SE SW NE 5-35n-65w
T.D. 5,485 ft., cemented 7-in. at 5,375 ft., testing.

Park County

Continental 2 Northern Pacific..NE NW NW 23-58n-98w
Drilling 3,204 ft. in red beds.
Resolute 2 State.....SW SW 16-57n-101w
T.D. 10,121 ft., P.B. again to redrill Frontier sands.

Sublette County

Klumpe Synd. 1.....NE SW NE 28-27n-113w
Location, first report, outpost on west side La Barge field.
Texas 1-C Government.....SW NW NW 24-27n-113w
Location.
Texas 1-J Government.....NW SW SW 27-27n-114w
Location.
Marvel Oil 6 Government....CEL SE SE 28-27n-113w
Rigging up.
North La Barge Oil 6 Govt. CNL SE NE 28-27n-113w
Drilling 700 ft.
Texas 1-I Government.....SW NW SW 27-27n-113w
Coring 1,077 ft.

Sweetwater County

Vermillion Oil Co. 1 Amelia Horrocks, SW SW SW 7-12n-99w, Hiawatha field, was completed at 3,504 ft. in sand in the Wasatch formation for 2,500,000 to 3,000,000 cu. ft. of gas a day. The 8⅝-in. was set at 3,440 ft. This marks an extension of the gas area on the Wyoming side, the well being a mile north and a little east of Mountain Fuel Supply Co. 1 Newberry, completed in sand at 2,347-74 ft. in 1929 for 30,000,000 cu. ft. a day. The Horrocks well is lower on structure than the wells producing oil on the Colorado side.

Red Desert Corp. 1 Edith Aspden, NW SW NW 34-18n-103w, North Baxter Basin area, had a hole full of water at 6,302 ft., total depth, in the Tensleep, and was plugged and abandoned. It had the top of the Tensleep at 6,158 ft. Location is 3 miles east and 1 mile south of Mountain Fuel Supply Co. 1 Lauzer, the nearest producer. First Frontier was at 2,565-97 ft., second Frontier at 2,682-2,722 ft. Top of Sundance was approximately 3,650 ft.

(Continued on Page 90)

AVERAGE DAILY PRODUCTION

WYOMING

	Dec. 7	Nov. 30
Salt Creek	15,440	14,510
Big Muddy	1,170	1,120
Byron	3,780	3,840
Frannie	2,800	2,450
Garland	1,890	960
La Barge	2,130	1,900
Lance Creek	25,470	24,980
Lost Soldier	3,430	2,490
Oregon Basin	5,600	4,700
Rock River	2,600	2,640
Wyoming	70,060	67,120

MONTANA

Kevin-Sunburst	4,920	4,830
Cut Bank	11,860	11,500
Montana	18,130	17,780

COLORADO

Iles Dome	1,670	1,530
Colorado	3,550	3,550

NEW MEXICO

Arrowhead	3,270	3,270
Cooper	2,890	2,890
Eunice	16,490	16,490
Hardy	3,000	3,000
Hobbs	8,990	8,990
Langlie	4,000	4,000
Mattix	4,470	4,470
Monument	17,280	17,280
Penrose	4,630	4,630
Skelly	1,950	1,950
South Eunice	2,330	2,330
South Lovington	1,220	1,220
Vacuum	11,600	11,600
Artesia-Maljamar	17,270	17,270
New Mexico	103,420	103,410

By
STAFF CORRESPONDENT

Development in Hamilton and White Maintains Production

MATTOON, Ill., Dec. 9.—Activity increased in Illinois during the past week, bringing the number of completions up to normal for the state. Of a total of 66 completions, 50 were oil wells with a total initial production of 8,998 bbl., and 16 were dry holes. Of the major fields, Louden showed an increase in activity with one dry hole and six producers completed for 1,379 bbl., or 230 bbl. per well, while activity in the Centralia field dropped back to its previous level with the completion of two oil wells. Activity in the Hoodville pool of Hamilton County showed a marked increase as eight wells were completed for 1,701 bbl., or 213 bbl. per well. White County activity continued to increase with reported completions of 21 producers and 3 dry holes. Production for the county, however, dropped back to normal with the 21 producers good for 3,672 bbl., or 179 bbl. per well, and one recompletion good for 139 bbl. Of the 24 completions, 5 oil wells and 1 dry hole were in the East Calvin pool. The remaining 30 completions were scattered throughout the basin area and included 13 oil wells with an initial production of 2,117 bbl.

SUMMARY OF COMPLETIONS

	No.	Prod.*	Footage
Oil wells: Centralia	2	226	5,345
Louden	6	1,379	9,267
Hoodville	8	1,701	23,667
East Calvin	5	663	13,791
Other White County pools	16	3,099	43,817
Other pools	10	1,597	25,840
Wildcats	3	433	8,329
Dry holes: Fields	5	.....	10,631
Wildcats	11	.....	28,693
Total	66	.....	169,380
Recompletions	69	7,867	.....

*Barrels.

The best well of the week, Magnolia 7 Sarah Clow, was completed in the Louden field in SE SE SW 32-8n-3e. This well flowed 900 bbl. after shots in the Cypress and Paint Creek.

Hoodville Pool Extensions

Ohio 1 R. E. Grimes, NW NW NW 2-6s-6e, which was completed last week, extended the Hoodville pool of Hamilton County ½ mile southeast. During the past week five wells were completed in the intervening area. These wells, all producers, had an average initial production of 234 bbl. per well. The pool was also extended ½ mile southwest during the past week by the completion of Texas 1 C. W. Hood, in NE NE NW 3-6s-6e, and ½ mile north by the completion of Exchange 1 Abbott, in SE NE SW 27-5s-6e, and Exchange 1 J. H. Stelle, in SE NW SE 27-5s-6e.

Kingwood 1 McGuire, which was a prospective pool opener in W½ SW NW 11-5s-7e, has been abandoned as dry. The test, a Hamilton County wildcat, was drilled through the McClosky.

AVERAGE DAILY PRODUCTION

	Dec. 7	Nov. 30
Salem	121,045	120,970
Louden	70,165	70,760
Centralia	16,150	15,850
Other basin fields	113,485	112,270
Old fields	11,200	11,120
Illinois	332,045	330,970

Recompletions

Although no new wells have been completed in the Salem field for several weeks, many old wells in which the production has declined to a very small amount are being recompleted in different formations. Recent recompletions include 64 oil wells in the St. Louis-Salem with an initial production of 6,736 bbl., 3 oil wells in the Aux Vases with a production of 292 bbl., and 1 oil well in the Devonian with an initial production of 700 bbl.

ILLINOIS COMPLETIONS

Bond County

Womack pool: Arrow 6 Spindler, SW NW SW 10-6n-2w, location abandoned.
Arrow 5 Spindler, NW NW SW 10-6n-2w, location abandoned.

Clay County

Clay City pool: Pure 2 Schrugham Consol., E½ SW SE 4-2n-8e, pumped 28 bbl., McClosky 2,981-83 ft., T.D. 3,065 ft.

Clinton County

Wildcat: Snell & Goldschmidt 1 N. Schaefer, SW NE NW 33-2n-3w, pumped 4 bbl. oil and 16 bbl. water 500 and 3,000 gal. acid 2,515-35 ft., T.D. 2,570 ft., P.B. 2,535 ft.
Martin 1 E. Just, NE NE NE 9-2n-1w, derrick abandoned.
Centralia pool: Adams 28 Copple, NW SE SW 35-2n-1w, pumped 126 bbl. oil and 26 bbl. water, T.D. 1,225 ft.
Borton 1 Storer, NW NE NE 13-1n-1w, pumped 100 bbl., Trenton 4,013 ft., T.D. 4,120 ft., P.B. to 4,080 ft.
Bartelso pool: P. Mosebach 2 P. Maddux, NW NE SW 4-1n-3w, pumped 22 bbl., 10-qt. shot, Cypress 993-1,004 ft.

Coles County

Wildcat: F. H. Bragassa et al 1 Frogden, E½ NE SE 11-11n-7e, dry, Benoist 1,974 ft., Aux Vases 2,024 ft., Ste. Genevieve 2,040 ft., St. Louis 2,106 ft., T.D. 2,114 ft.

Edwards County

Albion pool: Noah & Morrison 2 W. Barnes, SE SW SE 13-2s-10e, pumped 100 bbl. oil and 100 bbl. water, 4,000 gal. acid, McClosky 3,114-21 ft., T.D. 3,206 ft.

Effingham County

Wildcat: Kilpatrick 1 Mason Comm., SE SE NW 12-6n-5e, pumped 281 bbl., natural, McClosky 2,489-96 ft., T.D. 2,502½ ft., production increased to 511 bbl. on fourth test, and declined to 307 bbl. 5 days later.

Fayette County

Louden pool: Carter 3 Thomas Sickles, SE NE SE 9-8n-3e, pumped 14 bbl. oil and 17 bbl. water, 15-qt. shot 1,529-34 ft., 5 and 10-qt. shots Big Creek 1,584-90 ft., T.D. 1,592 ft., P.B. 1,540 ft.
Carter 1 Wood-Tipsword, SW SE NE 13-8n-3e, pumped 168 bbl., 20-qt. shot Cypress 1,500-06 ft., T.D. 1,512 ft., P.B. 1,506 ft.
Magnolia 7 Sarah Clow, SE SE SW 32-8n-3e, flowed 900 bbl., 20-qt. shot Cypress 1,463-83 ft., 40-qt. shot Paint Creek 1,526-42 ft., T.D. 1,542 ft.
Carter 1 Tipsword, NW NE NW 24-8n-3e, pumped 35 bbl. oil and 17 bbl. water, 10-qt. shot Cypress 1,534-41 ft., T.D. 1,550 ft.
Carter 5 W. Logue, NW NE NW 26-8n-3e, dry, Cypress sand 1,508-49 ft., Paint Creek stray 1,581-85 ft., Benoist 1,602-13 ft.
Carter 5 F. Durbin, SW NW NE 4-7n-3e, location abandoned.
Magnolia 26 T. C. Clow, SE SE NE 5-7n-3e, pumped and flowed 227 bbl., 10-qt. shot 1,444-51 ft., Cypress, 40-qt. shot Paint Creek 1,504-20 ft., T.D. 1,523 ft.
G. R. Yount 1 Breeze, NW NW NE 20-7n-3e, pumped 35 bbl., 30-qt. shot Cypress 1,539-48 ft., T.D. 1,548 ft.
St. James pool: Riley 1 Black, NE NW SW 25-6n-2e, dry, Cypress sand 1,624-29 ft.
Texas 3 Maxwell, SW NE SW 19-6n-3e, pumped 21 bbl., Benoist 1,594-1,600 ft., T.D. 1,601 ft., P.B. 1,600 ft.
Texas 1 E. A. Schwann, NE NE SE 30-6n-3e, dry, Benoist 1,617-30 ft.
Wildcat: Kingwood 1 Aukamp, SW SE 30-5n-3e, dry, Glen Dean 1,597 ft., Cypress sand 1,740 ft., Benoist 1,899 ft., show oil, Aux Vases 1,970-81 ft., Ste. Genevieve 2,038 ft., St. Louis 2,141 ft., Salem 2,720 ft., Chattanooga 3,404 ft., Devonian 3,500 ft., T.D. 3,510 ft.

Franklin County

Wildcat: Venorsky 1 L. Austen, SW SE SW 22-7s-4e, dry, Glen Dean 2,496 ft., Cypress sand 2,852-2,945 ft., Benoist 3,104 ft., Aux Vases sand 3,190 ft., T.D. 3,202 ft.

Gallatin County

Wildcat: A. A. Cameron 1 Robinson, NE NW NW 4-8s-8e, dry, T.D. 574 ft.
W. E. Allund 1 E. Frey, NW SE NW 19-8s-10e, location abandoned.

Hamilton County

Hoodville pool: Exchange 10 Friel-B, SW NW SE 34-5s-6e, swabbed 398 bbl., 10-qt. shot, Benoist 2,942-71 ft.
Shell 1 N. Porter, SW SE SE 34-5s-6e, pumped 240 bbl., 10-qt. shot, Benoist 2,929-52 ft., T.D. 2,952 ft.
Shell 3 N. Porter, SE SE SE 34-5s-6e, pumped 116 bbl., 5-qt. shot, Benoist 2,926-42 ft., T.D. 2,947 ft.
Shell 4 N. Porter, NW SE SE 34-5s-6e, pumped 192 bbl., 10-qt. shot, Benoist 2,931-57 ft., T.D. 2,959 ft.
Texas 2 Edwards, NE NE NE 3-6s-6e, pumped 222 bbl., 10-qt. shot, Benoist 2,926-47 ft.
Texas 1 C. W. Hood, NE NE NW 3-6s-6e, pumped 200 bbl., 10-qt. shot, Benoist 2,932-55 ft.
Exchange 1 Abbott, SE NE SW 27-5s-6e, pumped 125 bbl. oil and 20 bbl. water, 10-qt. shot, Benoist 2,949-66 ft., T.D. 2,972 ft., P.B. 2,966 ft.
Exchange 2 J. H. Stelle, SE NW SE 27-5s-6e, swabbed 208 bbl., 10-qt. shot 2,958-61 ft., T.D. 2,964 ft.
Wildcat: Exchange-Kingwood 1 Prince, NW SW NW 31-5s-7e, pumped 148 bbl. oil and 26 bbl. water, McClosky 3,126 ft., St. Louis 3,247 ft., 4,000 gal. acid, McClosky, perf. between 3,149 and 3,218 ft., T.D. 3,257 ft.

Marion County

Fairman pool: Shell 3 Ahlf, NW SW NE 18-3n-1e, pumped 53 bbl., Benoist 1,436-40 ft.
Wildcat: Clevetex 1 E. Squibb, S½ SE SE 29-3n-3e, dry, Menard 1,654 ft., Glen Dean 1,878 ft., Cypress sand 2,070-2,127 ft., Benoist 2,213 ft., Ste. Genevieve 2,342 ft., T.D. 2,500 ft.

Montgomery County

Wildcat: H. Green 1 Blackburn, SW SE NE 7-7n-2w, dry, Glen Dean 847 ft., Cypress sand 959 ft., Benoist 1,034 ft., Ste. Genevieve 1,094 ft., St. Louis 1,228 ft., Devonian 2,307 ft., T.D. 2,456 ft.

Pope County

Wildcat: Ohio 1 Gen. Am. Life, NE SE SE 10-11s-5e, dry, Ste. Genevieve 1,359 ft., T.D. 1,642 ft.

Richland County

Dundas pool: Pure 2 J. H. Wachtel-C, E½ SW NW 7-4n-10e, flowed 331 bbl., 5,000 gal. acid, McClosky 2,915-25 ft., 2,931-34 ft., T.D. 2,937 ft.

Wabash County

Wildcat: Ryan 1 Schafer, NE NW NE 7-2s-13w, dry, Golconda 2,320 ft., Cypress sand 2,461-74 ft., Aux Vases 2,672 ft., Ste. Genevieve 2,730 ft., T.D. 2,895 ft.

Wayne County

Enterprise pool: Pure 1 Wells Consol., E½ NW SE 29-2n-8e, flowed 417 bbl., 5,000 gal. acid, McClosky 3,040-43 ft., T.D. 3,105 ft.
Pure 1 Mueller Consol., E½ NE NW 8-1n-8e, pumped 149 bbl. oil and 43 bbl. water, McClosky 3,043-55 ft., T.D. 3,110 ft.
West Enterprise pool: Pure 1 Stanford School Consol., E½ SE SW 36-2n-7e, pumped 96 bbl. oil and 14 bbl. water, 5,000 gal. acid, McClosky 3,045-80 ft., T.D. 3,100 ft.
Boyleston pool: J. Meyers 1 Leininger, NW NW NE 9-2s-7e, flowed 380 bbl., 3,000 gal. acid, McClosky 3,256-59 ft., 3,263-68 ft., T.D. 3,272 ft.
Wildcat: Pure 1 C. Zimmerman, W½ NW SE 25-2n-7e, dry, Aux Vases 2,933 ft., Ste. Genevieve 2,975 ft., T.D. 3,135 ft.
Pure 1 Scott Hasselton, E½ SE NE 29-2n-8e, dry, Glen Dean 2,463 ft., Ste. Genevieve 2,979 ft., T.D. 3,096 ft.

White County

Griffin pool: W. W. Gray 9 fee, SW SW SE 14-3s-14w, pumped 40 bbl. oil and 9 bbl. water, McClosky 2,859-71 ft., T.D. 2,880 ft.
W. W. Gray 10 fee, SW NW SE 14-3s-14w, pumped 50 bbl. oil and 12 bbl. water, 3,000 gal. acid, McClosky 2,869-76 ft., T.D. 2,877 ft.
Springerton pool: B. Matin 3 R. Dunn, SE NW NW 6-4s-8e, pumped 108 bbl., 30-qt. shot, Aux Vases 3,232-51 ft.
East Calvin pool: Tide Water 2 Evans, NE SE NE 5-4s-14w, pumped 100 bbl., 3,000 gal. acid, McClosky 2,863-66 ft., Benoist 2,654-84 ft.
Magnolia 6 J. J. Bond, NW NW SE 8-4s-14w, pumped 144 bbl., 100-qt. shot, Paint Creek 2,640-2,706 ft., 2,716-24 ft., T.D. 2,752 ft.
Magnolia 7 J. J. Bond, SE NE SW 8-4s-14w, pumped 75 bbl., 100-qt. shot, Paint Creek 2,675-2,704 ft., T.D. 2,735 ft.
W. Duncan 1 C. C. Hughes, NW NE SE 17-4s-14w, pumped and flowed 171 bbl., 40-qt. shot, Benoist 2,688-2,713 ft., T.D. 2,716 ft.
K. B. Youst 1 B. Bramlett, NW NW SE 17-4s-14w, pumped 173 bbl., 80-qt. shot 2,688-2,707 ft., T.D. 2,722 ft.
Herndon Drig. 7 J. J. Bond, SW SE NW 8-4s-14w, dry, Ste. Genevieve 2,870 ft., T.D. 2,875 ft.
North New Harmony pool: Magnolia 4 E. Cox, NW NW SW 26-4s-14w, dry, 10-qt. shot, Paint Creek 2,764-70 ft., McClosky 2,956 ft., T.D. 2,990 ft., P.B. 2,884 ft.
Magnolia 5 E. Cox, SW NW SE 27-4s-14w, pumped 308 bbl., 3,000 gal. acid, McClosky 2,880-88 ft., T.D. 2,900 ft.
Superior 5 H. C. Ford-C, NW SW SE 27-4s-14w, flowed 400 bbl., 6 per cent water, 3,000 and 3,000 gal. acid, McClosky 2,875-90 ft., 2,944-55 ft.
Superior 8 H. C. Ford-C, SW SW SE 27-4s-14w, flowed 600 bbl., 3,000 gal. acid, McClosky 2,872-81 ft., 2,905-07 ft., 2,944-50 ft., T.D. 2,954 ft.
Rebeyre Island pool: Tide Water 4 Dennis, NE SW NE 33-4s-14w, pumped 125 bbl., 15-qt. shot, Cypress 2,579-88 ft., T.D. 2,590 ft.
Tide Water 6 Dennis, SW NE NE 33-4s-14w, pumped 125 bbl., Cypress 2,558-92 ft.
Tide Water 7 Dennis, NE SE NE 33-4s-14w, flowed 335 bbl., 40-qt. shot, Benoist 2,716-32 ft., Aux Vases 2,782 ft., T.D. 2,921 ft., P.B. 2,734 ft.
Superior 1 H. C. Ford-C, NW SW NW 34-4s-14w, pumped 410 bbl. oil and 5 bbl. water, McClosky

2,890-93 ft., 2,903-13 ft., Aux Vases 2,819-45 ft., Benoist 2,698-2,750 ft., T.D. 2,915 ft.

Superior 1 Greathouse, SW SW NE 4-5s-14w, recompletion, perf. 2,723-32 ft., pumped 139 bbl., T.D. 2,922 ft.

Storms pool: Blackstock 2 Watson, NE NW SE 11-6s-9e, pumped 105 bbl., 30-qt. shot, Waltersburg 2,275-86 ft.

Exchange 1 E. Holderby, SE NE NE 11-6s-9e, pumped 59 bbl., 5-qt. shot, Waltersburg 2,269-81 ft.

Exchange-Ohio 10 Pearce, SW SE NE 11-6s-9e, pumped 75 bbl., 5-qt. shot, Waltersburg 2,268-80 ft.

Exchange-Ohio 11 Pearce, NW SE NE 11-6s-9e, pumped 88 bbl., 5-qt. shot, Waltersburg 2,273-85 ft.

West Irons pool: H. V. Duncan 1 S. R. Henson, SW SW NE 23-6s-8e, pumped 96 bbl., Tar Springs 2,425 ft., T.D. 2,444 ft., P.B. 2,440 ft.

Southwest Barnhill pool: M. I. O. U. Corp. 2 H. G. French, W½ SE SE 4-3s-8e, pumped 175 bbl., 15 per cent water, 2,000 gal. acid, McClosky 3,474-80 ft., T.D. 3,483 ft.

Wildcat: Schenhauser & Brentano 1 C. Schrener, NE SW NE 4-3s-8e, dry, Menard 2,445 ft., Tar Springs 2,773 ft., Glen Dean 2,788 ft., Golconda 2,938 ft., Cypress sand 3,055-67 ft., Benoist 3,304 ft., Ste. Genevieve 3,406 ft., T.D. 3,569 ft.

ILLINOIS DRILLING REPORT

Bond County

J. Farrelly 1 Kyle ..... SW NW NW 28-4n-4w
S.D. 1,417 ft.

J. B. Barnes 1 Watts ..... NE SW NE 7-5n-2w
Drilling 2,053 ft.

J. Harding 1 Gottfried ..... NE NW NE 28-5n-4w
S.D. 930 ft.

P. Holleman 1 Basler ..... NE NW SE 25-4n-3w
Drilling 955 ft., set 8⅝-in. 100 ft.

Clark County

Sherritt et al 1 Jeffers ..... SE NE SE 31-11n-13w
Drilling 265 ft.

Clinton County

C. Bell 1 Maibaum ..... NE NE SE 12-3n-3w
Moving in.

Williams & Lyman 1 Thomas est. SW NE NW 24-2n-1w
Drilling 940 ft.

Wilson 1 Lippert ..... NE NE NE 27-2n-1w
Rig.

Hughes 2 Holman ..... NE SW SE 10-2n-1w
Rigging up standard tools.

Crawford County

Babler et al 1 Mitchell ..... N½ NW NW 21-6n-12w
Set 10-in. 72 ft., drilling 1,390 ft.

Douglas County

Pogue et al 1 Owens ..... NW SW NW 26-15n-7e
Drilling 310 ft.

Edwards County

J. D. Barnes 1 Hodgson ..... N½ NE 1-2s-10e
Menard 2,355 ft., Waltersburg 2,383 ft., drilling 2,505 ft.

R. Neely 1 Michael ..... NW SW NW 8-1s-10e
Menard 2,450 ft., Glen Dean 2,722 ft., Benoist 3,107 ft., Ste. Genevieve 3,247 ft., McClosky 3,297-3,301 ft., show oil, drilling 3,326 ft.

Effingham County

Turner 1 Pruett ..... SE SW NW 7-5n-3e
Fishing 1,805 ft.

C. L. Erwin 1 Patterson ..... SW SW NE 18-8n-4e
S.D. 1,686 ft.

Jarris Co. 1 L. Reitz ..... SW SW SE 13-7n-5e
Glen Dean 1,970 ft., Benoist 2,290 ft., Aux Vases 2,349 ft., Ste. Genevieve 2,402 ft., coring McClosky below 2,548 ft.

Fayette County

Luttrell et al 1 Bail ..... NE SW SE 16-7n-3e
Set 4½-in. 1,563 ft., waiting on cement 1,577 ft.

Carter 1 L. Dial ..... SW SE NE 12-8n-3e
Set 6-in. 1,531 ft., Glen Dean 1,368 ft., Cypress sand 1,528-44 ft.

Turner Drlg. 1 Williams ..... SW SW NW 6-6n-2e
S.D. 200 ft.

Cherry & Kidd 1 Farber ..... NE SE SW 5-8n-1w
Rigging up rotary.

Ford County

Nelson et al 1 Erp ..... SW NW SE 19-24n-7e
Lowered 5-in. to 2,413 ft., drilling 2,440 ft.

Gallatin County

Carter 1 B. M. York ..... SE SE SW 33-7s-8e
7-in. 2,110 ft., P.B. to 1,722 ft., Palestine, 10-qt. shot 1,701-11 ft., swabbed 526 bbl., putting on pump.

Cameron 2 Robinson ..... SE NW NW 4-8s-8e
Location.

Snowden & McSweeney 1 Frey ..SE SE NW 19-8s-10e
T.D. 2,781 ft., McClosky, testing.

Cameron 1 Rister ..... NE NE NW 4-8s-8e
Rig.

Hamilton County

Kingwood 1 McGuire ..... W½ SW NW 11-5s-7e
Aux Vases 3,365 ft., Ste. Genevieve 3,403 ft., McClosky 3,532 ft., S.D. 3,583 ft.

Hancock County

Sam Tate et al 1 J. Rice ..... SW NE NW 28-4n-5w
S.D. 1,495 ft.

Jackson County

W. R. White 1 Dean ..... NE NW NW 18-9s-3w
T.D. 1,230 ft., 7-in. at 1,143 ft., P.B. to 1,183 ft., drilled out 1,213 ft., Salem pay 1,206-13 ft., 500 gal. acid, cleaning out.

Barton & Shipmen 1 P. Maharry ..NE NE SE 10-9s-3w
S.D. 318 ft.

Magnolia 1 Smith heirs ..... SE SE NE 9-8s-3w
Set 10-in. 98 ft.

Jasper County

Pure 1 C. C. Price ..... W½ SW SW 16-6n-10e
Cellar.

Jefferson County

Vawter 1 Modglin ..... NW SE SW 9-1s-1e
Drilling 2,014 ft., Glen Dean 1,542 ft.

Lawrence County

Robinson 1 Sauers ..... NW SE NW 20-3n-12w
Drilling 3,953 ft.

W. Payne 1 H. Payne ..... NW SW NW 20-3n-11w
Drilling 850 ft.

Ky. Nat. Gas et al 4 Bierhaus ..S½ NW SE 13-4n-11w
Drilling 848 ft.

Madison County

F. C. Kiskadden 1 G. A. Fisher SE SW NE 27-5n-8w
Set 10-in. 171 ft., cleaning out, T.D. 190 ft.

Marion County

Martin et al 1 Robinson ..... SW SE SW 4-2n-1e
Trenton 4,268 ft., drilling 4,668 ft.

Paul Rossi 8 Brooks ..... SW NE SW 29-2n-2e
Drilling 3,860 ft.

Macoupin County

F. Mudgett 1 Dorks ..... NE NE NE 30-10n-7w
S.D. 475 ft.

McDonough County

Bancroft & Bowman 1 W. A. Murray .....
NW SE SE 8-5n-4w
S.D. 385 ft.

McLean County

Funks Grove O. & G. 1 Crawford .....
NW NW NW 28-22n-1e
Drilling 856 ft.

Montgomery County

H. C. Detrick 1 W. H. Barnes NW NE SE 20-10n-2w
Lost hole at 1,010 ft., skidding.

W. L. Topf 1 Fisher ..... NE NE SW 19-9n-3w
S.D. 917 ft.

Ginsberg et al 1 McDenver ..... SW NE SE 14-7n-2w
Rigging up rotary.

Perry County

Blankenship 1 Bednorkwicz ....SW SW NW 24-4s-2w
Drilling 530 ft.

Pope County

L. V. Garvier 1 Peoples ..... NE NE NE 30-11s-5e
10-in. 55 ft., drilling 62 ft.

Randolph County

J. R. Rankin 1 B. Bierman ..... SW SW SE 3-7s-5w
Drilling 405 ft.

Shelby County

A. Ginter 1 E. Fox ..... NW SE NW 34-20n-4e
12-in. 60 ft., drilling 90 ft.

J. Moore et al 1 fee ..... SW SW NE 30-10n-3e
S.D. 905 ft., 10-in. 864 ft.

Tazewell County

Bartelmav 1 Mathis ..... SW NW SW 24-25n-3w
S.D. 410 ft.

Wabash County

C. A. Evarts 1 Hahn ..... NW SE NW 8-1n-12w
Biehl sand 1,527 ft., 60-qt. shot 1,532-40 ft., cleaning out.

Big Chief Drlg. 1 Seibert ..... SE SW NW 24-2n-13w
Barlow 2,321 ft., Fredonia 2,648 ft., 30-qt. shot and 3,000 gal. acid, McClosky 2,673-88 ft., swabbing.

Warren County

Monarch 1 F. Hoadley ..... NW NW 11-9n-1w
H.F.W., S.D. 538 ft.

Washington County

John Pugh 1 Wynn ..... NW SW SW 33-3s-1w
Menard 820 ft., Glen Dean 1,018 ft., Benoist 1,384 ft., T.D. 1,671 ft.

De Kalb et al 3 Hunleth ..... SW NE NW 29-3s-4w
Menard 558 ft., Glen Dean 654 ft., Benoist 982 ft., Ste. Genevieve 1,108 ft., T.D. 1,186 ft.

Wayne County

Pure 1 G. Flexler ..... E½ SE SE 35-1n-7e
Rig.

White County

O. O. Borden 1 I. McCallister .... NE SE NE 7-5s-14w
Building tanks 2,671 ft.

J. T. Bradley 1 C. Randolph ..... NE NE SE 32-6s-9e
4,000 gal. acid 3,113-19 ft., P.B. to 3,049½ ft., 60-qt. shot, swabbing water.

Patton-Cary 1 Reeves heirs .... SW NW SE 28-3s-14w
Pumped 200 bbl., third day 132 bbl., to shoot, T.D. 2,614 ft.

French & Cotton 1 May Roy ... S½ NW NW 30-3s-9e
Set 10-in. 174 ft., S.D. 765 ft.

Yingling et al 1 Flood heirs ... SE NE SW 22-4s-14w
Set 10-in. 667 ft.

Eason 1 Delaff ..... NE SW NW 8-7s-8e
Moving in.

Duncan 1 Zeller ..... SE NE NE 34-3s-8e
Menard 2,393 ft., Golconda 2,747 ft., S.D. 2,890 ft.

North Louisiana-Arkansas

(Continued from Page 85)

Hunter Co. 1 Pipes ..... SW SE 18-8n-3e
Spudded.

Natchitoches Parish

Research Drlg. Co. 1 Walker ..... NE NE 9-10-10
Drilling 3,000 ft.

J. E. Watts 1 Tanner ..... SW SW NW 18-10-10
Set 5½-in. casing 3,220 ft., reported 20 ft. sand, T.D. 3,240 ft.

Rhodes & O'Meara 1 Prudential ..... NE SE 36-11-10
First report.

Red River Parish

Thornton & LaCroix 1 Prudential Life Ins. Co.
SW SW NW 31-11-9
Set 5½-in. casing, 1,195 ft., T.D. 1,317 ft., show oil.

Sabine Parish

Roy Raines 1 Carter ..... SW NW NW 27-9-11
T.D. 2,068 ft., testing.

J. E. Watts 1 Cook Land Co. ....W½ SW NE 27-10-11
Set 10-in. casing, 80 ft., drilling shale 1,785 ft.

Webster Parish

H. L. Hunt 1 Pardee ..... SW SE 36-22-10
T.D. 6,104 ft., S.D.

ARKANSAS COMPLETIONS

Wildcat—Clarke County

Coker & Grieves 1 E. S. Sullivan .. SW NE NE 2-11-20
T.D. 619 ft., dry.

Dorcheat—Columbia County

Lion 1 G. J. Dickens ..... NE NW 16-18-22
225 bbl., oil 75 bbl., salt water 13/54-in. choke, T.P. 2,000 lb., C.P. 2,900 lb., T.D. 8,940 ft., 5½-in. casing, 8,923 ft., perf. 8,858-63 ft., Smackover lime.

Village—Columbia County

Louark 2-B Gunnels ..... NE NW 20-17-19
288 bbl., 11/64-in. choke, C.P. 1,200 lb., T.P. 1,200 lb., T.D. 7,530 ft., Smackover lime.

Urbana—Union County

M. H. Harr 1 C. W. Tillman ..... SE NE NE 9-18-13
T.D. 3,049 ft., dry.

Marine 2 Brown ..... NE NW NW 10-18-13
425 bbl., 25% salt water, 23/64-in. choke, T.P. 450 lb., C.P. 925 lb., T.D. 3,000 ft.

Wildcat—Union County

Harry Porter 1 North Central Texas
NW NW NW 5-18-14
Old T.D. 3,838 ft. deepened to 3,939 ft., dry.

ARKANSAS DRILLING REPORT

Clark County

Coker Oil Corp. 1 Guess ..... NE SE NE 2-11s-20
Pumping estimated 25 bbl. fresh water, slight rainbow oil, T.D. 612 ft.

W. S. King 1 McKenzie ..... SE SE NW 30-10-19
10-in. casing, 40 ft., S.D. 240 ft.

W. P. Wilson 1 Hamilton & Mathews SW NW 32-10-20
T.D. 1,572 ft., S.D. high water.

Dallas County

H. H. McBride et al 1 Southern Kraft Corp.
SE SW 16-9-16
T.D. 1,463 ft., S.D.

Lonoke County

Lunnon, Howell & Ford 1 City of Cabot
Lot 1 Blk. 6 18-4n-9w
Drilling 1,375 ft.

Prairie County

Hazen Oil Co. 1 Fidelity Mutual Life Ins. Co.
NE SW 16-2n-6w
T.D. 340 ft., S.D.

Saline County

A. W. Givens 1 Williams ..... NW NE NE 18-3s-15
T.D. 690 ft., hole clean, arranging to deepen.

Tedford Drlg. Co. 1 Williams 31-3s-15w
S.D. 571 ft.

St. Francis County

U. S. Oil Corp. 1 Wilford ..... NE SE NE 29-4n-1w
S.D. 930 ft.

Union County

C. H. Murphy Jr. 2-B Cates et al S½ NW NW 33-18-15
T.D. 2,142 ft., pumping 175 bbl. water, slight rainbow oil.

Woodruff County

John N. Watkins 1 S. Nathan ....NE NE SW 18-5n-2w
8¼-in. casing, 325 ft., W.O.C.

EAST TEXAS BORDER COMPLETIONS

Wildcat—Cass County

J. S. Pate 1 W. D. Chew ..... Joseph Cole Sur.
T.D. 3,480 ft., dry.

EAST TEXAS BORDER DRILLING REPORT

Marion County

J. D. Parsons 1 T. W. Hook ..Alexander Allbright Sur.
Drilling 2,510 ft.

Panola County

Turner & Smith 2 Panola Development Co.
George Gillespie Sur.
Drilling 3,365 ft.

Shelby County

Superior Oil Co. 4 Pickering Lumber Co.
W. J. Crane Sur.
Coring 5,573 ft.

Rocky Mountain Area

(Continued from Page 88)

Rocky Mountain Drlg. 1 State SW SW SW 36-20n-104w
Moving in rotary.

Sinclair-Wyoming 78 ..... SW SW NW 11-26n-90w
Drilling 4,328 ft.

Sinclair-Wyoming 97-A ..... NW NW SW 11-26n-90w
Cemented 10¾-in. at 43 ft.

Gus Pongratz et al 1 Clark ..... NW NE 22-19n-104w
S.D. 5,005 ft., moving in heavier equipment, top red beds 4,955 ft.

Weston County

C. L. Foster 3, CEL SW SE 7-46n-63w, Osage field, was dry and abandoned at 790 ft.

Osage Trust Co. 1 fee, NE SW SE 10-46n-63w, a deep test east of the town of Osage and of the Osage shallow field, completed rigging up rotary and shut down until spring. This is a corrected location.

John Brorphy 1 Hansen ..... NW NE NW 13-44n-63w
Drilling below 2,000 ft. with show of gas in Wall Creek sand.

Lem Johnston 1 ..... NW SW 24-44n-63w
Resumed at 3,600 ft.

Al Jones 1 ..... NE NE NE 1-46n-64w
Spudded.

Carl Kundy 5 ..... NE SW SW 29-46n-63w
Drilling below 1,000 ft.

Riggs Oil 4 State ..... CNL NE SE 16-46n-64w
Drilling below 3,100 ft.

W. H. Connor 1 State ..... NW SW NE 36-42n-61w
T.D. 982 ft., top Sundance 951 ft., cleaning out after shot.

MONTANA

Big Horn County

Massey Oil & Gas 1 Government ..SE SW SE 11-2s-31e
Drilling 2,008 ft. in Dakota.

Blaine County

Cherry Ridge Synd. 1 Harbolt ...NW NW SW 1-35n-20e
Landed 10-in. at 1,220 ft., for formation shutoff.

Garfield County

H. H. Schwartz, Jr., 1 Charles . . . . SE NW 21-15n-30e S.D. 3,528 ft. in top Madison, will go to Devonian.

Glacier County

Cut Bank had one completion in William Hanlon 5 Allotted-128, NW SE NE 12-32n-6w, in the southwestern part of the field. It swabbed 110 bbl. the first 24 hours at 3,011 ft., total depth, from the Cut Bank sand at 2,962-96 ft. Main pay was at 2,986-96 ft.

Glacier Prod. Co. 5 Lookhoff . . NW NE NE 33-33n-5w
Rigging up, first report.
Texas 8 State . . . . . C NE SW 16-32n-5w
Spudded.
Texas 6 fee . . . . . 660 ft. N of S¼ cor. 15-35n-6w
Spudded.
Glacier Prod. 5 Simero . . . . . C NW SE 6-33n-5w
Cemented 10¾-in. at 475 ft., top Colorado 445 ft.
Glacier Prod. 8 State . . . . . NW NW SW 16-32n-5w
Cemented 10¾-in. at 580 ft., top Colorado 540 ft.
Consolidated Gas 1 Frary-Tribal NW NW SE 19-32n-5w
Rig.
Texas 6 Purdy . . . . . NW SW SE 35-35n-6w
Cemented 10¾-in. at 535 ft., top Colorado 505 ft.

Phillips County

Montana-Dakota Utilities 617, C SW SW 4-32n-33e, Bowdoin field, was completed at 1,040 ft. for 857,000 cu. ft. a day with a rock pressure of 269 lb.

Same company's No. 616, C SE NW 5-32n-33e, was completed at 1,050 ft. for 686,000 cu. ft. a day with a rock pressure of 247 lb.

Stillwater County

Texas 1 Unit, C SE NW 10-4s-19e, Absarokee structure, was plugged and abandoned at 7,116 ft., total depth. Lowest formation tested was the Sundance. It progressively tested the various horizons back up to the Eagle sand at 3,900 ft., but none showed commercial production.

Toole County

Kevin-Sunburst had one completion in Morton Oil & Refining 9 Morton, NW NW SE 13-34n-2w, which pumped 100 bbl. of oil and 50 bbl. of water a day at 1,428 ft., total depth, from the contact at 1,410-28 ft. after acidizing with 500 gal. Oil rose 400 ft. in the hole before treating.

Kevin Oil 4 Leach . . . . . C SE NE 31-35n-3w
T.D. 1,669 ft., cemented 7-in.
R. G. Parrant 1 Holbrook . . . . . C NW NE 2-36n-3w
Resumed at 1,475 ft., drilling 1,500 ft.
Montana Gas Corp. 1-X Nelson CNL SE NE 12-35n-1e
Drilling 2,115 ft.
A. A. Welch 2 Lerum . . . . . SE SW NW 25-36n-2w
T.D. 1,658 ft., contact at 1,641-58 ft.

NORTHWEST NEW MEXICO

Bernalillo County

David H. Boyd 1 Wright 11-10n-5e
Building rig, first report, Tijeras area.

McKinley County

Ambrosia Investors Co., Inc., 1 Govt. SE SE 11-14n-10w
T.D. 1,600 ft., underreaming 8-in. from 1,362 ft. to bottom.

Rio Arriba County

E. B. McKenna 1 Government-Rath . . . . NW 29-26n-2e
Drilling 300 ft.

San Juan County

Red Cactus Oil 1 Tribal . . . . . SE cor. 35-29n-18w
Drilling 950 ft.

San Miguel County

Southwest Drilling, Inc., 1 Conchas NW NE 34-17n-21e
Recementing 8¼-in. at 2,635 ft.

Torrance County

J. P. Stewart 1 Laman . . . . . C NW NE 3-3n-12e
Drilling 600 ft.

UTAH

Box Elder County

Northern Oil 1 . . . . . NE SW 17-13n-4w
Resumed at 386 ft. and drilling ahead at 475 ft.

Summit County

Longwell Pet. Co. 1 . . . . . SE SW SE 35-3n-5e
S.D. 3,525 ft. for drilling line after setting 4¾-in. at 3,492 ft.

North Mitchell County Active

Northern Mitchell County, West Texas, is undergoing a play as development is started in the recently opened Dockery-Robbins area. The area, yet composed of only the discovery well, has a total of some 30 locations staked, several of which are in the drilling stage at the present time. The field is located just southeast of the old Ira or Northwest field of southern Scurry County, which is itself just southeast of the now active Sharon field of Scurry County. The discovery well of the Dockery-Robbins area was Dockery & Robbins 1 Crawford, SW cor. Section 13, George Reiger Survey, completed for a small producer at the 1,700-ft. level. Several outlying tests have been drilled to the discovery pay horizon and have found shows of oil; however, to date, only the discovery well has been officially completed.

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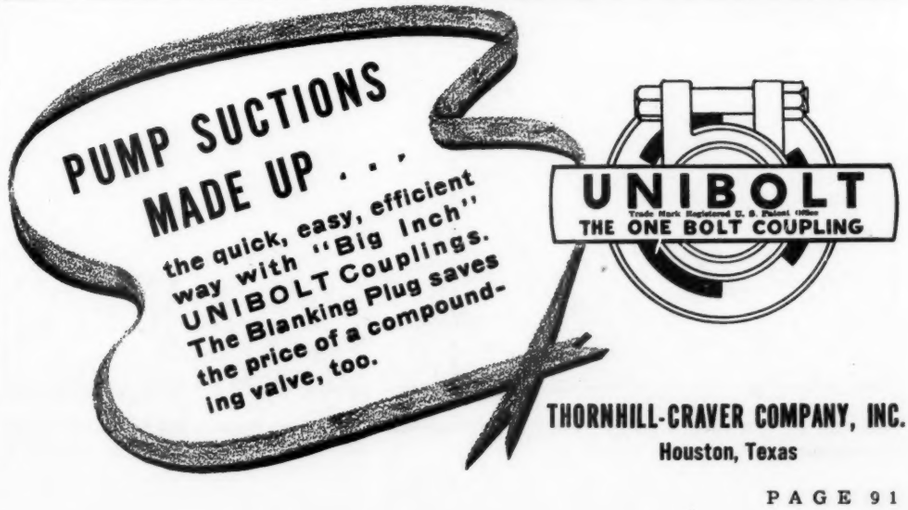
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LOUISIANA GULF COAST

West Bay Prospect Definitely Opens New Coastal Field

By F. L. SINGLETON

NEW ORLEANS, La., Dec. 9.—A new oil field for the Louisiana Gulf Coast was practically assured as Gulf 1 J. G. Timolat, located on the West Bay prospect, Plaquemines Parish, recovered pipe-line oil on a drill-stem test. Sand showing oil was topped at approximately 7,269 ft. and cored to a depth of 7,286 ft. An 8-minute drill-stem test was made at 7,267-78 ft. and the well tested 170 lb. working pressure, and 5,340 ft. of 31.8-gravity oil was recovered. The test was made through a $\frac{1}{8}$-in. choke on top, and a $\frac{1}{4}$-in. choke on bottom. The hole is being reamed and a string of 9⅝-in. casing is being cemented which indicates that the hole will be drilled deeper before completion is attempted. This well was reported the previous week as running 300 ft. structurally higher than the company's 1-E Buras Levee district, a deep test which was drilled in 1939, and that a sand section showing oil was logged at 5,046-67 ft. A second electrical survey made during the week revealed four additional sand sections at intervals from 6,413-7,090 ft., and at least three of them are expected to produce. They were logged at 6,400 ft., 6,600 ft., 6,700 ft., and 7,000 ft.

The completion of this well as a commercial producer would add another field to the delta area flanking the Mississippi River. The well is located in 36-22s-30e, on the west side of the river in West Bay. It is west of the Garden Island field, located near the mouth of the Mississippi River.

SUMMARY OF COMPLETIONS

	No.	Prod.*	Footage
Oil wells: New Iberia	3	754	17,133
Golden Meadow	4	1,291	23,890
Other fields	5	1,343	44,054
Dry holes: Fields	2	.....	13,350
Wildcats	1	.....	7,521
Total	15	.....	105,948

*Barrels.

Paradis Outpost Running Low

W. P. Luse and J. P. McAdams 1 Peyregne, 2 miles south of the Paradis field, St. Charles Parish, is drilling in sandy shale below 10,764 ft., and the well looms as a dry hole as it continues to check structurally low. Based on recent electrical surveys the well is checking over 1,000 ft. lower than Texas 1 Paradis, and 555 ft. lower than Texas 2 Paradis, both of which are producing wells in the Paradis field proper.

In the Franklin area, St. Mary Parish, E. G. Bateman continues to test 1 Foster, but the results have been disappointing. The latest test was made through perforated casing at 10,390-10,402 ft., and on a 4-hour drill-stem test, the well showed 43 lb. working pressure and flowed mud, salt water and a slight trace of oil. The perforations will be squeezed off and another test is slated to be made in the same section. The present sand section is reported to be the deepest of three possible sands that have been encountered, and these will be tested after a thorough test is made of the present section.

South Crowley Deep Sand

A new sand discovery in the South Crowley field, Acadia Parish, which extended production about ½ mile southeast, was recorded with the completion of Humble 1 Freeland, completed through perforated casing at 7,093-97 ft. for an initial production of 3 bbl. of 35.6-gravity oil per day through a $\frac{1}{8}$-in. choke. The well was shut in shortly after completion due to a high gas-oil ratio, and it may have to be recompleted. This is the third producing horizon for the field, and the well was drilled to a total depth of 9,029 ft. after logging only slight showings in the two proven sand sections.

Iowa Development

Operators interested in the development of the deep pay in the Iowa field, Calcasieu and Jefferson Davis parishes, were watching the result of a drill-stem test at Shell 32 Heyd which is attempting to test a new sand section several hundred feet higher than the 8,200-ft. pay. After showing gas and distillate from what is believed the Vicksburg sand at 8,758-63 ft. an attempt was made to complete in the 8,200-ft., but the test was a failure, and at the close of the week casing was perforated at 7,570-73 ft., and a drill-stem test was being made. In the meantime, the company's 4 Fontenot is coring in shale below 8,674 ft. and the well is expected to test the 8,700-ft. sand. Magnolia 16 Walt, the most westerly deep test drilled, is coring in shale and lime below 8,338 ft. and no shows have been reported. On the south flank and located about 2,000 ft. south of production, S. W. Richardson 1 Sweet Lake Land Co. is drilling in shale below 8,512 ft., and the 8,200-ft. sand was apparently missed, although a small amount of sand which carried an oil show is reported to have been recovered in cores at approximately 7,500 ft.

Shell Oil Co., Inc., has rigged up for another test in the La Pice field, St. James Parish, where the company several weeks ago opened the first crude production from a new sand. The new test is 1 Schexnayder Community in 38-12s-15e, about 3,000 ft. from 1 Federal Land Bank which flowed pipe-line oil from a new sand at approximately 7,600 ft., some 3,000 ft. shallower than previous gas or distillate production.

Operators interested in the development of the Wilcox sand in the Ville Platte field, Evangeline Parish, were watching the outcome of a production test on Continental 1 Evangeline Securities Co. Unit 2. The well is located about 3,500 ft. southwest from the nearest production, and the successful completion would open considerable acreage for development. The hole is bottomed at 10,125 ft. and the well is testing through perforated casing after plugging back to 10,080 ft. Details as to where the well is being tested were not available.

New Activity

Navarro Oil Co. acquired a farmout lease on the Bayou Blue dome, Iberville Parish, from Humble Oil & Refining Co., and material is being moved in for the first test, 1 Wilberts Mineral Co. in 74-9s-10e.

In the Erath area, Vermilion Parish, Phillips Petroleum Co. is reported to be conducting geophysical work and location for a new test might be announced. The company holds considerable protection acreage in the area, consisting principally of the Drunella Co.'s holdings which was acquired several months ago.

The St. Gabriel prospect, St. Martin Parish, is slated for a new test as Titanic Oil Co. acquired a farmout lease from Shell Oil Co., and tentative location is reported to have been made although details of the location were not available. Shell Oil Co., Inc., has drilled two tests in the area, and the latest abandonment, 1 Natalbany Lumber Co., logged several interesting showings.

An attempted blowout of Herton Oil Co. 1 Leonard has attracted attention to the Frey prospect in Acadia Parish. The attempted blowout occurred while drilling below 9,600 ft., and after the well was quieted, drilling was resumed. Location is in 29-7s-1e.

LOUISIANA GULF COAST COMPLETIONS

Acadia Parish

Wildcat: H. M. Naylor 1 Medlenka, dry, T.D. 7,521 ft.

East Baton Rouge Parish

University field: Superior of Okla. 1 Hatfield, 120 bbl., ⅛-in. choke, perf. casing 6,798-6,806 ft., T.D. 7,240 ft.

Iberia Parish

New Iberia field: Wm. Helis 13 Bolivar, 45 bbl., 10/64-in. choke, perf. casing 3,455-75 ft., T.D. 3,682 ft.
Wm. Helis 3-A Bullock, 466 bbl., ¼-in. choke, perf. casing 5,290-40 ft., T.D. 6,256 ft.
Texas 3 V. J. Smith, 243 bbl., ¼-in. choke, perf. casing 7,140-62 ft., T.D. 7,195 ft.

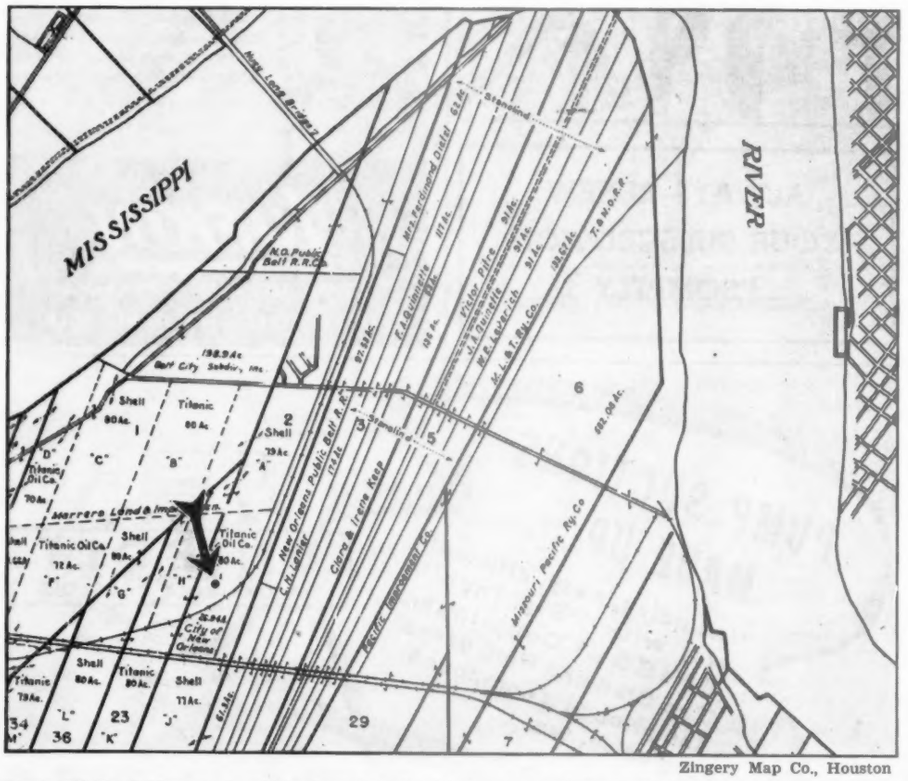
Jefferson Parish

Barataria field: California 1 Fleming Plantation, 275 bbl., 5/32-in. choke, perf. casing 8,190-8,208 ft., T.D. 8,310 ft.

La Fourche Parish

Golden Meadow field: Texas 8 Laterre Land Co., 650 bbl., ¼-in. choke, T.D. 7,940 ft.
Bateman Drilling Co. 1 Collins, 180 bbl. oil, plus 10

(Continued on Page 96)



Zingery Map Co., Houston

Titanic Oil Co. 1 Marrero, a wildcat located in the Westwego area, Jefferson Parish, which has shown promise of production

EASTERN TEXAS FIELDS

Gage of Test in Wood County Shows Fair Production

By R. MARNE SANFORD

DALLAS, Tex., Dec. 9.—Wood County was still in eastern Texas spotlight as the Hawkins test which has been indicating an oil discovery for several weeks finally reported a substantial gage. There are two other outpost tests in the area which are preparing to drill and several permits have been filed for additional drill sites.

The discovery is Bobby Manziel 1 Morrison, James Pollack Survey, just north of the town of Hawkins in Wood County. At the close of the week the test reported a gage of 288 bbl. of oil, pumping, in 24 hours. The casing pressure was reported at 210 lb. and there was about 5 lb. pressure on the separator. It was a heavy 23-gravity, dark oil, unlike most of the crudes obtained from the Woodbine sand elsewhere in eastern Texas. The production was through perforations in a liner set at 4,925 ft. It was perforated with 18 shots from 4,910-16 ft. A complete water shutoff was not obtained and the test made 192 bbl. of salt water with the oil. It was not announced whether the gage would stand as official or further testing for a complete water shutoff would continue.

South and slightly west of the discovery Manziel was preparing to spud 1 Lee Bell, in the Edward Wideman Survey. The third test for the area is Jackson and Rotondi 1 Cobb, in the Brewer Survey, Hawkins townsite. It has been rigged up for immediate spudding.

A. A. Olson of Gladewater has been granted drilling permit for 1 Harrison Prince, center of a 10-acre tract in the E. Wideman Survey. Manziel has filed application for four drilling permits in the area. Two are to be in the same tract as the discovery well while two are to be outposts for the area.

SUMMARY OF COMPLETIONS

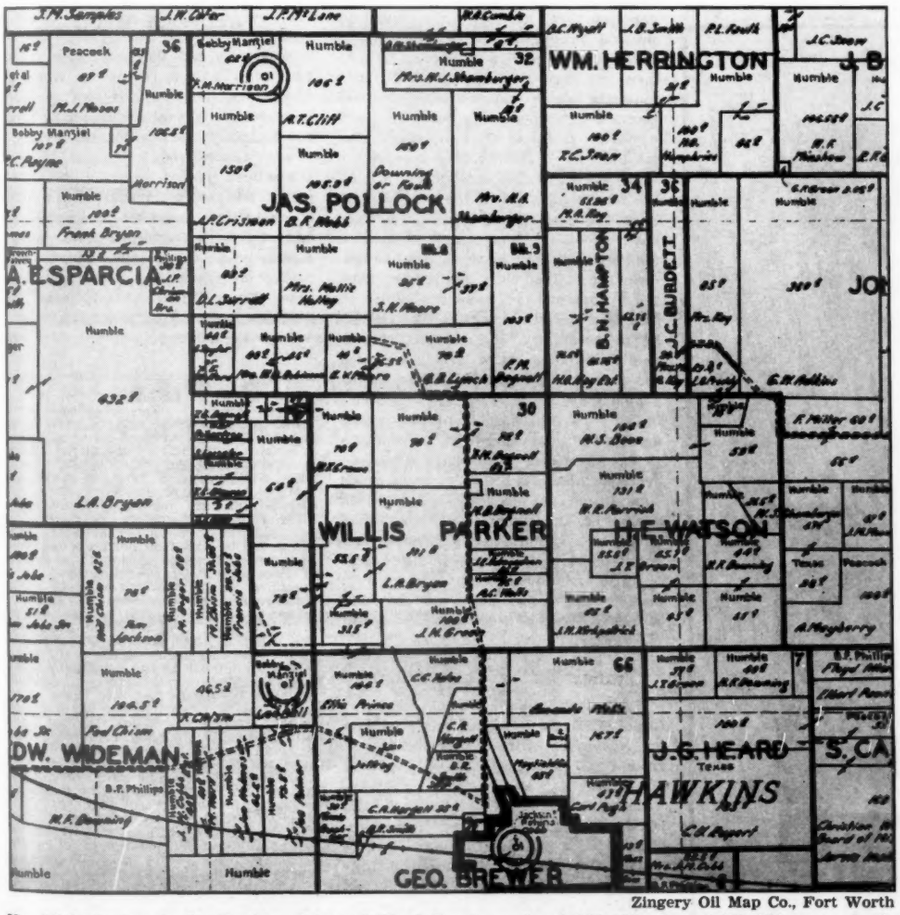
East Texas Field

	No.	Prod.	Footage
Oil wells	8	*355	28,838
Service wells‡	2	.....	7,530
Eastern Texas			
Oil wells: Fields	3	†388	13,174
Dry holes: Wildcats	2	.....	8,433
Total	5	.....	21,607
Service wells: Talco‡	1	.....	1,171

*Barrels an hour. †Barrels in 24 hours. ‡Salt-water disposal wells.

Chapel Hill Field

Delta Drilling Co. 1 Browning, McDonald Survey, northeast outpost to the Chapel Hill field in Smith County, was apparently a failure in the Paluxy sand, its first announced objective. The well was started as a Paluxy sand test only, however, it is drilling ahead below 5,875 ft. after no shows were found in the Paluxy, third and shallowest for the four-pay field.



Zingery Oil Map Co., Fort Worth

Manziel 1 Morrison in the Hawkins district of Wood County produced 288 bbl. oil and 192 bbl. water in the Woodbine sand. There are two locations in the area and several additional permits have been filed

A new mile-southwest outpost to the field has been spotted as Sun 1 Dickerson. It is on a 159-acre tract in the James Holden and Matthew Arnold surveys, 725 ft. from the north and 660 ft. from the east lines of the lease. It is about a mile southwest of Shell and Sun 1 Bacon, southernmost well in the field.

New Wildcat Tests

Temporary location has been made by Plains Production Co., Dallas, for a wildcat test in Rains County. It will be 1 Homer Foster, on an 81-acre tract in the McCumming Survey, 1 mile east of the town of Alba and on a 5,000-acre block assigned to Plains by the Texas Co. If drilled it is intended to be a deep exploratory hole testing the Paluxy, Glen Rose, and the Travis Peak sections.

In Van Zandt County B. F. Trawick of Gladewater has obtained permit for a wildcat; however, details of the test have not been announced. It is to be 1 J. B. Reynolds, 640 ft. from the north and east lines of a 32-acre tract in the James Fortune Survey.

EAST TEXAS FIELD COMPLETIONS

(1-hour gages)

Gregg County

Longview area: Joe Long 11-C Owens, 30 bbl., tubing, 3,646-56 ft.
Peyton Bros. 4 Jones, 80 bbl., tubing, 3,573-86 ft.
Texas 12 Wood, salt water disposal well, T.D. 3,760 ft.
Kilgore area: Hamil & Smith 2 Griffin, 45 bbl., tubing, 3,544-70 ft.
Overton Refg. 21-B H.&G.N.R.R., 40 bbl., tubing, 3,540-65 ft.
Sinclair Prairie 27-B King, 60 bbl., tubing, 3,438-72 ft.
L. L. Sugar 5 Griffin, 50 bbl., tubing, 3,536-61 ft.
Swindler 8 Mayfield, 20 bbl., tubing, 3,727-28 ft.

Smith County

Joiner area: Ohio Oil 9 Thompson, salt water disposal well, T.D. 3,770 ft.

Upshur County

Longview area: B. F. Phillips 1 Sprouse, 30 bbl., tubing, 3,699-3,700 ft.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Wildcat: Tex-Harvey Oil 1 Cartmell, E. Ewing Sur., 4 mi. SW Palestine, top Pecan Gap 3,838-4,001 ft., Austin chalk 4,955-5,230 ft., Woodbine 5,493 ft., water, dry at 5,553 ft., T.D.
Long Lake field: Tide Water-Seaboard 1 Wade Evans, combination gas and oil well, 28 bbl. oil, ⅝-in. choke, gas-oil ratio 10,377:1, pay 5,230-50 ft.

Franklin County

Talco field: Magnolia 1 Rutherford, 130 bbl. in 6 hr., 2½-in. tubing, 4,226-72 ft.

Freestone County

Cayuga field: Stanolind 5 J. S. Cullinan, 102 bbl., ¼-in. choke, 3,646-52 ft.

Navarro County

Wildcat: Coffield & Guthrie 1-A Hines, J. McNeal Sur., 2 mi. SW of Angus, dry at 2,900 ft.

Titus County

Talco field: Humble 1-M McPeters, salt water disposal well, T.D. 1,171 ft.

EASTERN TEXAS DRILLING REPORT

Anderson County

R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, 5,000-ft. test, top Austin chalk 4,475 ft.; coring 4,766 ft.

Fannin County

H. T. Fleming 1 Welch, E. J. Allen Sur., 4 mi. NW Honey Grove, T.D. 1,270 ft., prep. abd.
Damon Oil 1 A. L. Chaffin, SW cor. 85-acre tract, J. Ketcham Sur., 4 mi. NE Bonham, location cleared, prepare move in materials.

Freestone County

J. L. Collins 1 Utley, Claypool Sur., tested 5 bbl. oil then salt water broke in. S.D. 4,506 ft.

Henderson County

L. A. Demer 1 E. F. Bain, 104-acre tract in John Duncan Sur., 3½ mi. N of Bazzette, Woodbine test.

Hill County

Rush & Sanders 1 Hutchinson, L. W. Williams Sur., 2 mi. SW of Mt. Calm, drilling 280 ft.

Hopkins County

L. A. Rankin 1 Chapman, Francis Hopkins Sur., drilling 4,404 ft.

Kaufman County

T. G. Shaw, trustee, 1 Agnes Wynne, B. S. Newman Sur., 8 mi. E of Kaufman, lower Trinity test, S.D. for high water 6,454 ft.

Lamar County

T. M. Parmly 1 C. H. Townsend, J. S. Porter Sur., 1½ mi. N of Chicolo, S.D. 1,612 ft.

Leon County

H. W. Hawker 1 C. H. Mills, M. Copeland Sur., 2½ mi. E of Normangee, S.D. 4,365 ft.

McLennan County

E. P. Campbell 1 Stewart, S. Burton Sur., 5 mi. N of Waco, S.D. 360 ft.

Limestone County

Farrell Drlg. and Gulf Oil 1 F. Bevill, J. H. Murray Sur., 1 mi. SW of Horn, Travis Peak 4,892 ft., S.D. 4,937 ft., curing titles.
Hardin & Ames 1 Hammond, J. Folk Sur., 1¼-mi. NW of Kosse, top Austin 2,765 ft.; Woodbine 3,210 ft.;
(Continued on Page 96)

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CANADIAN FIELDS

Attempt Made to Equalize Production Over Year

By VICTOR LAURISTON

CHATHAM, Ont., Dec. 7.—The aggregate allowable for Turner Valley crude wells for December has been provisionally set at 682,000 bbl., or 22,000 bbl. a day, comparing with a November allotment of 762,000 bbl. The December figure is for 128 wells, including 7 new producers; and also includes a provisional allotment of 31,000 bbl., or 1,000 bbl. a day, for new wells to be completed in December.

In the new schedule, Foothills Oil & Gas 5, in North Turner Valley, is the largest producer, with 544 bbl. a day. Other large wells are Calmont-Northwest 2, with 450 bbl.; Pacific Petroleums 5 with 406 bbl.; Alberta Oil Incomes 2, with 405 bbl.; Royalite 48 with 378 bbl.; and Home Oil 2, with 360 bbl. The Home wells in North Turner Valley, with aggregate November allotment of 2,500 bbl., have been cut to 1,279 bbl., including quota for Home 5, a new completion.

The December figure of 22,000 bbl. a day compares with an allowable at the end of December 1939 of 12,000 bbl.

Statement on Policy

R. E. Allen, chairman of the Alberta Conservation Board in a statement accompanying the new quota schedule, explains that instead of the usual depressed production of winter months followed by excessive production in summer, the Turner Valley field will likely maintain a substantially stable rate of production throughout 1941. The outcome of efforts of G. R. Cottrelle, Dominion oil controller, in cooperation with Turner Valley producers, is that the market demand of the prairie provinces has been coordinated and refiners have provided storage and committed themselves to take crude at a fairly uniform rate till at least October 31, 1941, thus providing the necessary outlet to maintain winter production. Turner Valley producers, by increasing the rate of new completions, have largely provided the necessary reserves to insure a dependable supply to refiners.

The board's policy is to secure the greatest ultimate production from the field. Aggregate quotas are based on demands of the refiners, existing crude storage and the efficient productive capacity of the field; while individual quotas are computed on a basis of productive acreage, formation pressure, gas-oil ratio and flow capacity through 1-in. choke. The board hopes to maintain the daily average of 22,000 bbl. through the winter.

Turner Valley Completions

North Turner Valley: Foothills Oil & Gas 5, LSD 13, 27-20-3w5, finished late in November with initial allowable around 900 bbl., has been allotted 544 bbl. a day for December.

Home Oil 5, LSD 16, 28-20-3w5, finished at 8,078 ft., has been given provisional allowable of 325 bbl. a day.

West Central field: Okalta Oil 9, LSD 13, 18-19-2w5, finished at 7,971 ft., given provisional allowable of 238 bbl. for November, has new quota of 185 bbl. Calmont-Northwest 2, LSD 5, finished at 7,956 ft., with temporary allowable of 700 bbl. for November, has been given allowable of 450 bbl., making it the second largest well in the field.

Arrow Royalties 2, LSD 15, 13-19-3w5, finished at 8,353 ft., has provisional quota of 325 bbl. Twin Valley Syndicate 1, LSD 9, finished at 8,309 ft., has tempopary allowable of 325 bbl.

Allied Royalties 1, LSD 16, 6-19-2w5, finished at 7,625 ft., has temporary allowable of 325 bbl.

Southwest field: Northwest-Hudson's Bay 4, LSD 14, 8-18-2w5, finished at 8,387 ft., has been given allowable of 226 bbl. a day.

Tests in the Lime

North Turner Valley: Home Oil 1, LSD 8, 33-20-3w5, is below 7,709 ft., 254 ft. in the Madison, and will be an early completion. A recurrence of the Fernie shale was encountered after reaching the lime but the drill shortly afterward entered the upper porous zone.

Foothills Oil & Gas 7, LSD 4, 27-20-3w5, is finishing below 8,239 ft. after getting the lime at 7,980 ft.

Southwest field: Pacific Petroleums 4, LSD 3, 32-18-2w5, is below 7,964 ft., 435 ft. in the Madison after finishing a difficult fishing job.

New Tests Starting

North Turner Valley: Home Oil 7, LSD 14, 33-20-3w5, is rigging. Home Oil 8, LSD 16, 15-20-3w5, is moving outfit from No. 5, recently completed. Home Oil 9, LSD 8, is working on cellar.

West Central field: Renown Royalties 1 has been spotted in LSD 8, 24-19-3w5, and is rigging rotary outfit from Allied 1 completion. Location is immediately east of Independent Royalties 1 and immediately north of Atlas Royalties 1, neither of which has yet reached the lime. Okalta Oil 11, LSD 10, same section, has spudded.

Anglo-Canadian 9, LSD 14, 7-19-2w5,

LEGAL

Department of the Interior, United States Land Office, Cheyenne, Wyoming. Notice is hereby given that a lease of the oil and gas deposits in lot 6 (NW¼ SW¼) and SW¼ SE¼ Sec. 6, T. 26 N., R. 89 W., 6th P.M., 81.64 acres, in the Wertz Dome (additional) oil and gas field, Wyoming, is offered to the responsible qualified bidder of the highest bonus per acre, the minimum bid to be $15.00 per acre, pursuant to the provisions of section 17 of the act of February 25, 1920 (41 Stat. 437), as amended, at the royalty rate scale in the lease form shown in circular 1386, at a sale to be held in the office of the Register of the district land office at Cheyenne, Wyoming, at 10:00 a.m. on December 18, 1940. The successful bidder will be required to deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the bid, and file a showing of qualifications to receive the lease required by section 7 of General Land Office circular 1386. The remaining four-fifths of the bid, together with the annual rental in advance at the rate of $1.00 per acre, must be paid and a $5000 corporate surety bond must be furnished prior to the issuance of the lease. The successful bidder is required to subscribe to the unit plan of operation for the Wertz Dome field, as approved by the Secretary November 4, 1937. Bidders are warned against violation of the provisions of section 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

is rigging rotary outfit from the abandoned Anglo-Canadian deep test in the Steveville field.

Far North Test

A new outpost well in North Turner Valley will be Ace Royalties 1, spotted in LSD 5, 4-21-3w5, immediately north of Alberta Oil Incomes 2 producer. Test is being sponsored and financed by Commonwealth Petroleum of Calgary and its subsidiaries.

Border Fields

On the Blood Indian Reserve, southern Alberta, Northwest Petroleum 1, LSD 3, 20-5-23w4, is below 4,113 ft., with production expected around 6,000 ft.

In the Lethbridge area, Lethbridge Petroleums 1, LSD 12, 11-8-22w4, is around 3,000 ft., with production expected above 4,000 ft.

On the Calling Valley structure, east of Turner Valley, Sentinel Oil 1, LSD 15, 8-20-2w5, which has been standing at 7,350 ft., may be completed to the lime. Arrangements for completion are being made by J. F. M. Moodie and associates of Calgary, who sponsored the original test.

Steveville Field

In the Steveville field, eastern Alberta, Standard of British Columbia 2 Princess, LSD 3, 13-20-12w4, is in the lime below 4,024 ft. and testing at 30-ft. intervals.

Vermilion Field

In the Vermilion field, East Central Alberta, Acme Oil & Gas 1, LSD 5, 20-50-5w4, is being finished as a gasser, at around 1,834 ft. Acme 2 is pumping heavy crude at intervals, with production estimated 150 bbl. a day. Acme Gas & Oil Co. is arranging with Ajax Oil & Gas Co., Oil Selections, Ltd., and Anglo-American Royalties for joint development of 800 acres in a southerly extension of the Battleview-Vermilion area. Development will be started early next spring.

Vermilalta-Frankview 2, LSD 4, 20-50-5w4, is flowing around 50 bbl. a day. Storage facilities have been provided and some crude shipped.

Saskatchewan Test

Northwest Co., production subsidiary of Imperial Oil, is considering plans for extending its drilling operations into Saskatchewan. The acreage under consideration is in western Saskatchewan, close to the Alberta border. One block extends from a point south of Maple Creek northward to the Unity-Vera area, where R. H. Breckon and associates of Calgary have done some drilling. Another area is farther east and south, extending from a point south of Moose Jaw to near Estevan. Seismographic surveys have been made in both areas, but no plans for actual drilling have been announced. Imperial Oil in its 1919 development campaign undertook several tests in southwestern Saskatchewan, but these failed to secure production, and later its drilling in western Canada was limited to Alberta and the Northwest Territories.

Eastern Canada Production

Crude production from Ontario fields in September totaled 18,750 bbl. compared with 16,121 bbl. in the same month of 1939. For the 9 months of 1940 production totaled 143,088 bbl. against 154,867 bbl. in the same period last year.

New Brunswick production in September was 2,151 bbl. against 1,682 bbl. for September 1939. For the 9 months it was 14,113 bbl. in 1940 and 14,770 bbl. in 1939.

Fort Norman Field

Crude production from the Fort Norman field, in the Far North, in September was 5,863 bbl. compared with 1,813 bbl. for the same month last year. For the 1940 season up to the end of September it was 17,141 bbl., against 17,031 bbl. in 1939.

Canadian Gas Production

Natural-gas production marketed from all Canadian fields in September totaled 1,782,514,000 cu. ft. compared with 2,085,564,000 cu. ft. in the same month last year. For the 9 months of 1940 the output was 25,102,463,000 cu. ft., an increase of 0.7 per cent over the 24,927,868,000 cu. ft. produced in the corresponding 1939 period.

Natural Gasoline From Kettleman Hills

The Kettleman North Dome field which is located in western Kings County and eastern Fresno County produces slightly more than 21 per cent of California's total monthly production of natural gasoline from seven natural-gasoline plants.

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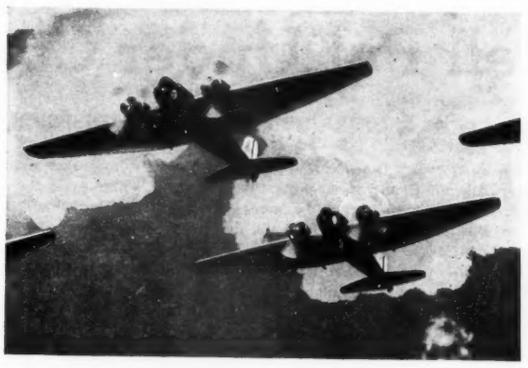

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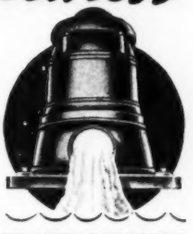

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Fire in Michigan's Deep Gas Well Put Under Control

By OTTO C. PRESSPRICH

SAGINAW, Mich., Dec. 9.—Nine completions on leases in five Allegan County townships, five resulting in commercial wells with after-acid potentials ranging from 50 to 250 bbl. a day highlighted the past week's developments in Michigan oil fields.

Interest of oil men and the public generally was centered, however, on a spectacular blaze that resulted from an explosion early last Friday in Michigan's deepest test for oil, the Gulf Refining Co. 1 Bateson, in Monitor Township, Bay County, 5 miles northwest of Bay City. Five employes of Parker Drilling Co. escaped death by a matter of minutes when the well, which encountered a heavy natural-gas pocket at a depth of 7,776 ft., a week previously, exploded with a roar audible over a 5-mile radius. The men had left the rig about 5 minutes previously and were in a toolshed 100 yd. away when the blast occurred.

On Saturday Myron M. Kinley and a crew of three helpers, who had flown to Bay City from Fort Worth, Tex., snuffed out the blaze with a 10-lb. charge of blasting gelatin. The drilling equipment was a mass of twisted, melted steel. Damage to equipment was estimated at $65,000.

Little work had been done at the well since the gas flow, estimated at upward of 12,000,000 cu. ft. a day, began gushing from the hole. Only a few hours before the blast heavy pressure control had arrived to be used to check the flow, but the crew had not begun installation.

Gulf officials had not announced future plans concerning the test. The drilling started late in the summer, the objective being a depth of 9,000 to 10,000 ft.

During the week 22 tests were completed in Michigan, 13 being dry holes, worst of them probably being Pure Oil Co. 1 Payne in Section 35 of Clare's Winterfield Township, which was completed dry at 3,827 ft. and dashed hopes for a new field promised by the Rowmor Corp. 1 Wyman discovery in Section 29, drilled in 3 weeks ago and producing 213 bbl. a day, after acid treatment. However, two other tests are planned in the area. In Hamilton Township, the Sun Oil Co. 1 McIntosh, Section 16, was drilling around 1,300 ft. First test to the northwest of the McKenna discovery well, it is the only remaining direction untested. Practically all others were unsuccessful. Meanwhile American Drilling Co. 2-X State, one of the few active tests in the Clare-Redding field, was completed for natural flow of 120 bbl. a day.

There were five completions in Kent County, but only one, a Walker Township well, got production. A small well brought in in Tallmadge of Ottawa was the only other production. Total initial potential from the nine producer completions of the week was 1,178 bbl.

Due chiefly to extensive development by Taggart Brothers, Michigan State geologists predicted natural-gas production in the state in 1940 may attain a record of 14 billion cubic feet. F. R. Frye, department geologist, said the first 10 months' output was 11,025,000,000 cu. ft., about 10 per cent more than the total for 1939. He cited increased use of casing-head gas and greater drilling activity.

Sixteen drilling permits were issued during the week. Bringing the year's total to 1,058, they were allotted, five to Allegan County, two each to Van Buren, Ottawa, and Isabella, one each to Montcalm, Gladwin, Kent, Clare, and Mason.

Also under consideration is a new wildcat test, 8 miles west of Mount Pleasant, in Deerfield Township, Isabella County, while a Grand Rapids group is said to be planning a wildcat test in Presque Isle County, Michigan island in Lake Michigan. Few tests have been made there, and in 1935 the county's supervisors posted a $25,000 bonus offer, still good, for the first well that would produce 200 bbl. a day for 10 days.

SUMMARY OF COMPLETIONS

	No.	Prod.*	Footage
Oil wells: Allegan County	5	780	7,490
Kent-Ottawa counties	2	65	3,751
Other	2	333	7,614
Dry holes: Allegan County	4	.....	5,730
Kent-Ottawa counties	5	.....	11,091
Other	4	.....	8,135
Total	22	.....	43,811

*Barrels.

AVERAGE DAILY PRODUCTION

	Dec. 7	Nov.30
Temple	9,655	10,032
Buckeye	2,079	2,683
Walker	7,232	7,691
Van Buren County	2,712	2,683
Allegan County	7,645	7,674
Wise	1,696	1,892
Adams	2,048	1,912
Michigan	45,124	46,358

MICHIGAN COMPLETIONS

Allegan County

Dorr Township: Talbot Oil Co. 1 Miller, NW NE NW 18-4n-12w, dry, T.D. 1,100 ft.

Gun Plains Township: Keyson Oil Co. 1 Steel, NE NW NE 6-1n-11w, dry, T.D. 1,604 ft.

Overisel Township: H. C. Nelson 4 Kroeze, SE SW SW 9-4n-14w, 180 bbl., acid, T.D. 1,510 ft.

Gordon Oil Co. 6 Koopman, NW NE NW 16-4n-14w, 250 bbl., acid, T.D. 1,510 ft.

Gordon Oil 7 Koopman, SW NE NW 16-4n-14w, 50 bbl., acid, T.D. 1,513 ft.

Salem Township: Regal Dutch Petroleum Co. 1 Ritz est., SE SE SW 10-4n-13w, 100 bbl., acid, T.D. 1,584 ft.

Kent Drilling Co. 1-A Smith, NW SW NE 15-4n-13w, dry, T.D. 1,640 ft.

Trowbridge Township: H. L. Gentry Engineering Co. 1 O'Dell, SE SE SW 20-1n-13w, dry, T.D. 1,386 ft.

Paul R. Hardy 1 Bridgeman, NE SE NW 29-1n-13w, 200 bbl., acid, T.D. 1,373 ft.

Clare County

Redding Township: American Drilling Co. 2-X State, S½ NE SW 29-19n-6w, 120 bbl., natural, T.D. 3,842 ft.

Winterfield Township: Rowmor Corp. 1 Wyman, W½ SW SE 29-20n-6w, 213 bbl., acid, T.D. 3,772 ft.

Pure Oil 1 Payne, N½ NW SE 35-20n-6w, dry, T.D. 3,827 ft.

Kent County

Byron Township: W. L. McClanahan 1 Smith, SE SW NE 16-5n-12w, dry, T.D. 1,807 ft.

Nelson Township: Miller & Fothergill 1 Parker, N½ NE NW 15-10n-10w, dry, T.D. 2,713 ft.

Walker Township: H. C. Williams 5 Thurkettle, NE SW 29-7n-12w, 40 bbl., acid, T.D. 1,869 ft.

Ide Oil & Gas 3 Burgess, SW SW NE 32-7n-12w, dry, in Monroe, T.D. 2,610 ft.

Wyoming Township: Temple & Lininger 1 Patterson, SW NW SE 15-6n-12w, dry, T.D. 1,970 ft.

Montcalm County

Home Township: Belvidere Oil Co. 1 Scheirn, C SE 28-12n-6w, dry, T.D. 1,311 ft.

Ottawa County

Tallmadge Township: Coon & Dooley 1 Postumus, NE NW NE 16-7n-13w, dry, T.D. 1,991 ft.

Fisher-McCall Oil & Gas 2 Masterson, NE NE SE 23-7n-13w, 25 bbl., acid, T.D. 1,882 ft.

Shiawassee County

Perry Township: Fisher-McCall 1 Placeway, SW SE NW 25-5n-2e, dry, T.D. 1,915 ft.

Van Buren County

Geneva Township: Smith Petroleum Co. 1 Edwards, SE NW NE 27-1s-16w, dry, T.D. 1,082 ft.

Louisiana Gulf Coast

(Continued from Page 92)

per cent salt water, ⅛-in. choke, perf. casing 5,436-44 ft., T.D. 5,520 ft.

Brown & Wood 1 Cheramie, 319 bbl., ¼-in. choke, perf. casing 5,142-54 ft., T.D. 5,225 ft.

Tidwell Oil Corp. 1 Doucet, 142 bbl., ⅛-in. choke, perf. casing 5,150-63 ft., T.D. 5,205 ft.

Plaquemines Parish

Quarantine Bay field: Gulf 20 Q. Q. State, 526 bbl., ¼-in. choke, perf. casing 9,540-50 ft., T.D. 10,536 ft.

Venice field: Tide Water 13 Manhattan Land & Fruit Co., 195 bbl., ⅛-in. choke, perf. casing 7,536-7,600 ft., T.D. 7,750 ft.

St. Martin Parish

Bayou Bouillon field: Superior 4 Rycade, dry, T.D. 3,318 ft.

Happytown field: Shell 2 Iberville, 227 bbl. oil and 107 bbl. salt water, 10/64-in. choke, perf. casing 9,949-52 ft., T.D. 10,228 ft.

St. Mary Parish

Charenton field: Pan American 15 Laws Realty Co., dry, T.D. 10,222 ft.

LOUISIANA GULF COAST DRILLING REPORT

Cameron Parish

Superior 4 State, Calcasieu Lake dome, T.D. 8,664 ft., running electrical survey.

East Baton Rouge Parish

H. C. Cockburn 1 Gianelloni, 6 mi. SE of University field, 58-8s-1e, drilling shale 7,325 ft.

Iberia Parish

F. K. Campbell 1 Gabriel Darby, 56-11s-6e, drilling shale 2,910 ft.

Jefferson Parish

Titanic Oil Co. 1 Marrero, Westwego prospect, drilling sand in sidetracked hole 7,412 ft.

Jefferson Davis Parish

Continental 1 Jaenke, South Roanoke field, drilling shale 7,325 ft.

La Fourche Parish

Mikton Oil Co. 5 Martinez, La Fourche Crossing field, drilling sandy shale 9,875 ft.

St. Bernard Parish

California et al 1 Biloxi Marsh Lands Co., 25-12s-16e, drilling shale 4,225 ft.

St. Mary Parish

Sun 1 Belle Isle Corp., Belle Isle dome, drilling shale in sidetracked hole 5,310 ft.

Terrebonne Parish

Stanolind 1 State, Bay Junop dome, drilling lime 9,186 ft.

East Texas Fields

(Continued from Page 93)

Buda 3,359 ft.; Georgetown 3,490 ft.; Paluxy 4,220 ft.; Glen Rose 4,290 ft., drilling 4,475 ft.

Navarro County

J. R. Bunn 2 Cheney, J. White Sur., 3 mi. SE Navarro, rigging up.

Red River County

J. F. Morrissey 1 Tyler, James Miro Sur., 3½ mi. SE of Bogota, 5,000-ft. test, drilling 2,612 ft.

Wood County

Bobby Manziel 1 F. M. Morrison, James Pollock Sur., 4 mi. N of Hawkins, 10-in. at 10 ft., top Woodbine sand at 4,902 ft., saturated from 4,902-20 ft., well checks 300 ft. high, 5½-in. at 4,898 ft., 15 bbl. of 28-gravity oil recovered on initial tests, P.B. 4,894 ft. and drilled out to 4,908 ft., let stand 12 hr. and salt water rose 800 ft. in hole, drilled out to 4,925 ft. and made 85 per cent water and 15 per cent oil, water believed coming from upper part of pay level, still testing, T.D. 4,962 ft., P.B. 4,925 ft., drilled out to 4,917 ft.; perf. 4,909-15 ft.; swabbed down 2,000 ft., rigging up pump for test.

Bobby Manziel 1 M. Carter, 31-acre tract on E side of Wideman Sur., ¾-mi. NW of Hawkins townsite, location.

Jackson & Rotondi 1 Cobb, Geo. Brewer Sur., in the Hawkins townsite, rigging up.

Delta Drlg. Co. and Sells Pet. 1 Beckham, G. W. Cowan Sur., 4½-mi. NE of Mineola, drilling 57 ft.

Stonewall County, Texas, Active

Stonewall County in the southeastern part of the Great Plains area of West Texas, has been undergoing a leasing program during the past few months which is scheduled to bring new drilling to the county after the first of the year. During the past year important steps have been made to make this county important in the oil-producing program. The first production in the county was opened about 14 miles northwest of the town of Aspermont by W. I. Southern, Inc., and at present there are two wells producing from the 5,150-ft. level in the Palo Pinto lime. Both wells were completed for potentials in excess of 200 bbl. daily. About 7 miles south of Aspermont and some 22 miles south and slightly east of this production, Shell Oil Co., Inc., opened a field a few months ago in the 6,016-65-ft. Mississippian lime. At present a west offset to this discovery is being drilled by Shell on the Rutherford land. More recently Shell quit as a failure its 1 Patterson, a wildcat located 5 miles west and slightly north of the W. I. Southern production. The test topped the Mississippian lime at 6,490 ft. and the Ellenburger at 6,740 ft. and was declared dry at a total depth of 6,760 ft.

The newest leasing in the county is about 3 miles northeast of the Shell production south of Aspermont. General Crude Oil Co. of Houston has taken several hundred acres. Lester Clark has taken about three sections, and Shell has added to its block by taking several outlying tracts. The fact that Shell's field produces from the Mississippian lime is due to attract more drilling for the near future.

Kemper and Clarke County Wildcats Showing Oil

By GEORGE WEBER

JACKSON, Miss., Dec. 9.—Of immediate interest in Mississippi activity is a show of oil in a Kemper County wildcat. While indications of commercial production are not seen in the show, it stands out as important in another otherwise disappointing week in Mississippi wildcatting.

The wildcat is R. J. Dean 1 Land, NW NE 12-10n-14e, which was begun by R. M. Crabb et al, and recently taken over by the present operator. The test, contracted into the Eutaw, cored in that section late last week between 2,194-54 ft. and showed oil enough for samples to be gathered on the pits, for samples. A further core taken at 2,154-60 ft., however, carried shows of neither oil nor salt water, and further coring will be necessary before the possibilities of oil discovery may be determined.

Another wildcat showing oil is the Walsingham & Earles 1 School Land, SW NW NE 16-4n-15e, in Clarke County. This test, now drilling below 1,595 ft., is reported to have shown a rainbow of oil at 500 ft. and another show at 1,433 ft.

Further wildcatting of interest concerns widely separated points in Mississippi and Alabama. Madison County, Mississippi, has a new wildcat operation, to be drilled by Higgason & Dills and located west of a northwest-southeast fault line extending through the prospect.

In Copiah County, the G. C. Koch 1 Broome, in the Wesson district, is reported to be scheduled for early deepening after being taken over by the Ze-Nae Oil Co. following settlement of title dispute on acreage around the wildcat.

Bolivar County, in little-explored northwestern Mississippi, has a test beginning, E. S. Holmans 1 Thomas, located near the Mississippi River.

To the east in Alabama, reports are current that Union Producing Co. is planning a second wildcat in Choctaw County, where 1 McCorvey which Union took over from the late Joe Modisett, is believed to have encountered good gas shows in the Tuscaloosa formation. Rentals have been kept up on the block, known as the Bladon Springs prospect.

Tinsley Development

Further success on the southeastern extension of Tinsley in the thick Woodruff sand section improved that field's potential reserves during the week, and location of the northeast-southwest fault extending through the southeast section of the field was better defined. Union Producing Co. 6 Perry, SE NW 24-10-3, encountered the Woodruff sand, as expected, on the upthrow side of the fault, getting 30 ft. of the sand and topping it about 270 ft. higher than the same operator's 1 Childress, about ½ mile to the southeast.

Following Union's success in the Childress and Robinette leases on the southeast edge of the field, other operators are entering the area, and definition of the field in that direction may follow shortly as drilling operations more closely approach the two dry holes drilled by Whigate Oil Co. in Section 20. By now it appears that the latter tests are located just northeast of the main fault which cuts the field in a northwest-southeast direction.

Tinsley development may suffer curtailment as a result of a decline in purchases of the crude. Effective December 1, Standard Oil Co. of Louisiana, principal purchaser in the field, announced a reduction in pipeline take, from 100 to 75 bbl. per well per day. Some operators are still running oil to storage and crude from the E. C. Johnston leases is being moved to Vicksburg for refining.

Leasing shows an increase in Hinds County during the past week, and general leasing continues most active in southeastern Mississippi, southwestern Alabama and western Florida. Geophysical activity follows the same trend away from Mississippi and sustained in Alabama, with 24 crews shooting the former state and eight the latter. Core drilling continues in Madison and Covington counties.

MISSISSIPPI COMPLETIONS

Wildcat—Montgomery County

E. R. Henderson 1 Columbian Mutual Life Ins. Co. 36-21n-5e
T.D. 3,479 ft., dry, Tuscaloosa.

Wildcat—Yazoo County

Arcarea Reserve Co. 1 J. G. Holmes . . SE SE 22-12n-1e
T.D. 5,916 ft., tops Selma 4,565 ft., Eutaw 5,444 ft., dry, no shows.

Tinsley—Yazoo County

Union 6 Childress . . . . . SW SW 20-10-2
474 bbl., 16/64-in. choke, C.P. 260 lb., T.P. 225 lb., Woodruff sand 4,827-4,905 ft., 7-in. casing 4,924 ft., T.D.

MISSISSIPPI DRILLING REPORT

Attala County

Clint Crosby 1 Allen . . . . . SW SW 33-13n-5e
S.D. 4,534 ft., 5½-in. casing 4,086 ft.

Bolivar County

Ed S. Holmans 1 Thomas 18-24n-7w
Drilling 195 ft.

Clarke County

Walsingham & Earles 1 School Land . . . . . SW NW NE 16-4n-15e
Drilling 1,595 ft., report shows oil 500 ft. and 1,433 ft.

Forrest County

Fohs Oil Co. 1 Batson-Hatten 10-1n-12w
T.D. 2,000 ft., lost circulation.

Grenada County

James Papadakis 1 Holcomb . . . . . SE NE 13-22n-2e
T.D. 3,797 ft., S.D., stuck drill stem 3,511 ft., lubricating.
Womble & Williams 1 Conn. Gen. Life Ins. Co. . . NW SE 28-23n-5e
S.D. 1,875 ft., waiting on heavier rig.

Hinds County

J. S. Sanford and Bob Sellers 1 J. D. Sellers . . 23-6n-1e
S.D. 608 ft.

Kemper County

R. J. Dean (former R. M. Crabb) 1 Land . . . . . NW NE 12-10n-14e
Cored 2,149-54 ft., show oil, cored 2,154-60 ft., recovered 3 ft., no show.

Lee County

R. L. Shoemaker 1 Martin . . . . . SW SW NE 33-9s-6e
Fishing 950 ft.

Madison County

Higgason & Dills (fee unknown) . . . . . SE SW 8-11n-5e
First report.

Marshall County

C. B. Blosser 1 C. Stansback . . . . . SE SE 19-3s-4w
701 ft., no report.

Montgomery County

W. O. Allen 1 Palmertree . . . . . SE SW 30-17n-7e
Moving in.

Noxubee County

Hope & Thompson 1 Donahoe . . . . NW NW 25-16n-17e
Drilling 915 ft.

Prentiss County

Home Dev. Co. 1 Allen . . . . . SW NW SE 8-7s-9e
S.D. 2,165 ft.

Sharkey County

British American 1 F. B. Houston Est. N½ NE SW 23-11n-7w
T.D. 4,027 ft., lubricating for 400 ft., stuck drill stem.

Winston County

Frame & Young 1 Chancellor . . . . . NE 9-13n-14e
Moving in.

Yazoo County

R. J. Dean 1 Allgood . . . . . NE NW 10-11n-2w
Moving in.

Sink Holes Important Feature In Arbuckle Dolomite

(Continued from Page 21)

location, being only 106 ft. from the nearest producing oil well—one with an initial potential of 1,324 bbl. daily.

The other case where a dry sink hole is surrounded by eight producing wells at Silica is that of Gulf 4 Sessler, in N½ N½ SW 24-20-11w, Barton County. Here the sink hole consists of 40 ft. of detritus and the Arbuckle dolomite was originally penetrated 14 ft.; it was later deepened for a salt-water disposal well.

The geologist submitted proof that sink holes occupy a small area and rarely exceed the 10 acres in which they are drilled. He said that out of 36 sink holes there are no offset sink holes, with only one exception, an area in western Rice County including three wells on a north-south line.

The deepest sink hole drilled to date in the Silica area encountered 163 ft. of detritus at Lario 2-A Zahorsky, in SE NE NE 23-20-11w, Barton County, penetrated to 3,485 ft. It is offset by two direct producing wells and by two barren wells in the Arbuckle dolomite.

Another exceptional example of thick detrital zone is that of Stanolind 1 Herter in NE NE 17-20-11w, which found 137 ft. of conglomerate material overlying the Arbuckle dolomite; this well likewise was a dry hole, and was drilled to a total depth of 3,593 ft. for a water-disposal well. Location was on a 40-acre pattern and two offsets in the center of 40-acre tracts proved productive.

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Oil Compact to Seek Greater Coordination Among States

(Continued from Page 17)

with a sharp increase to 144 per cent in October.

T. A. Morgan, of Wichita, director of the Department of Conservation, Kansas Corporation Commission, and chairman of the committee on regulatory practices, reported that wide variations were found. Time to study the final report of the legal committee was asked before recommending codified practices.

The pattern conservation law to be presented by the legal committee will offer an opportunity for the compacting states to coordinate their regulatory practices. The pattern will provide for contingencies of individual approach to the conservation problem.

Probability that Arkansas will join the compact was expressed by J. H. Alphin, representing Gov.-elect Homer M. Adkins, who said a bill to accomplish this would be submitted shortly after the legislature convenes.

E. J. Coyle, representing Gov. John Stelle, of Illinois, pledged his support for a conservation law in that state. Gov.-elect Dwight Green, of Illinois, was represented by Gilbert E. Keebler who said the new chief executive is extremely interested in oil conservation and wants Illinois to resume an active post in the compact.

A new committee was to be appointed by Governor Phillips to consider any necessary changes in the compact bylaws. Alterations are expected that will permit participation of federal government agencies in compact deliberations.

Ewing T. Kerr, attorney general of Wyoming, hinted that his state may consider compact membership. He said he found nothing in the compact objectionable to his state.

At the Saturday morning session in Tulsa, Mr. Buttram pledged cooperation of the I.P.A.A. in the extension of compact activity advocated by Mr. Hunter.

Olin Culberson of Austin, Tex., railroad commissioner-elect, said he hoped the industry would have no cause to complain when the new commission is organized and functioning.

Rep. Wesley E. Disney, of Tulsa, told the general compact meeting that the Cole bill and revision of the depletion allowance are certain to come before the next session of Congress. Sam Pettengill, former congressman from Michigan, warned against centralization of petroleum-regulatory power in Washington.

Principles of Allocation in Conservation of Oil

(Continued from Page 19)

The insertion of the new factor in the trade channel method of determining state allocations would result in the development of a production pattern more in harmony with the conservation ideal, undoing some of the rigidities introduced by the freezing effect of the present quota system. The objectives would be to gain greater equity and higher efficiency, without destroying equilibrium or impairing the investment in existing physical facilities.

Step 3: Allocation of state demand to regions.—The natural economic unit for proration is the petroliferous region, which frequently is not coextensive with political subdivisions. Many of these areas are crossed by state lines, as for example the Pennsylvania Grade area, the Illinois-Indiana section, the Permian basin, the Gulf Coast, and others. These great petroleum regions have individual homogeneous characteristics such as quality of the oil, physical facilities, investment pattern, and markets. State allocations are required for administrative purposes, but they must be subdivided into regional allowables which in turn are a necessary stage in determining field quotas. The Interstate Oil Compact Commission can play an important part in promoting uniform proration policies in interstate oil regions and thereby substantially contribute to the cause of conservation.

At present, the breakdown of state quotas into regional allowables is handled by state authorities in an indirect manner. A gain would be registered if this function were made more specific and the results promulgated; for it appears that regional allowables are now merely summations of field quotas, instead of the basis for the determination of field quotas. The distinction is more important than it appears offhand, for a greater degree of competition should exist between regions than between the fields within a region. Proper field quotas cannot be computed until the regional allowables are first established. The same allocation principles apply to regions as to states and the same procedures would naturally be in order, although the divided region offers a new problem in administration specifically within the sphere of the Interstate Oil Compact Commission.

Step 4: Allocation of regional demand to fields.—At this point in the system a new principle enters, that of the community market, but its implications will become clearer after consideration of the man ner in which field quotas may be prorated to the component properties, which will now be discussed, returning to field quotas later.

Step 5: Allocation of field quotas to properties.—Perhaps the most firmly established principle in the entire area of proration is that properties within a single oil field shall be produced ratably. The reason for this rule is both physical and legal, involving the elements of conservation and equity. The method of prorating output amongst the several properties in a field is still in the course of evolution from the well as a unit toward the optimum rate as the ultimate common denominator. When the well is used as the base, overdrilling and excessive investment are stimulated to the detriment of equity and equilibrium. The procedure is now going through the intermediate stage of employing acreage as a modifying factor to represent the available reserve. This shift in emphasis from the well to the reserve has resulted in more logical well-spacing patterns and a closer approximation to equity.

The principle governing the allocation of quotas to individual properties is the prevention of important pressure differentials with their impairment of recoveries and infringement of correlative rights. While the optimum rate is of controlling importance in considering the reservoir as a whole, there is a simplification in administration which may be applied to individual properties and wells. The developed reserve may be employed as a first approximation for prorating the field market to the property units, with subsequent adjustments and corrections when large pressure differences occur or other criteria of the optimum rate are transgressed. Differential takings result in cross drainage, upset uniform underground depletion, and bring about waste of reservoir energy resulting in the violation of both conservation and equity. The avoidance of these consequences necessitates recognition of a community market within the field and the principle of a common market for the single reservoir has become firmly established and institutionalized even though not formalized by name. No one could reasonably advocate nonratable takings within the reservoir and therefore no one could logically contend that there is a special market demand for oil from a particular property.

Discussion of Step 4: Allocation of regional demand to fields.—The principle of the community market is applicable to intraregional allocations, although it has not been widely recognized in this area, much less established as an accepted practice. The absence of its application here has given rise to serious administration difficulties on the part of the state commissions, and to disruptive inequities affecting competing operators. Proration has been of presumptive advantage to certain segments of the industry and in exchange for its benefits certain obligations have been incurred. Among them is acceptance of the principal of a community market instead of a private market, just as proration has invalidated the law of capture by replacing it with the concept of a common reservoir in the operation of which all producers have mutual obligations. The theory of a regional community market is an inevitable corollary of the theory of the community interest in the oil pool itself.

Recognition of the broad principle of community interest in the regional market for crude oil greatly simplifies the problems of proration. It clarifies, among other things, the status of special allowables. One of the bugbears of proration is the claim of a special demand for oil from a particular field not contemplated in the existing quotas and outside the allocations already made. It is difficult to deal with such representations, not to mention settle the problems of equity among fields in the same region which may arise from unbalanced increases in production. The factors creating pleas for special allowables are varied but most of them stem from the interest of a buyer in the particular field or in the gaining of markets by concessions in price. Each of these influences is inimical to the general welfare of the industry and carries with it the seed of further complications. Should the recognition be necessary of a bona fide extra and unusual demand, as applying to a particular field, the situation could be met by shipments from storage or through anticipation of future production. The concept of the community market, however, does not admit of special allowables, except when it can be demonstrated beyond question that quality specifications can only be met from a single source; and such cases can readily be identified by a well-informed commission.

Once the idea of a community market is firmly established for the fields within a region, the principles governing the breakdown of regional quotas into field allowables can be formulated and implemented. The central theme of conservation is that no field shall be permitted to exceed its optimum rate. The optimum rate accordingly becomes the natural and logical common denominator. Full equity between the fields of a region requires that all be produced at the same percentage of their respective optimum rates, except in so far as this principle must be modified in practice to provide for wells not properly proratable. Changes in procedure must logically take into account the factors of equity and equilibrium and therefore the basis of setting allowables should be altered gradually, so as to move slowly toward the optimum-rate method, if necessary using reserves at an intermediate stage. The following plan using graduated formulas is suggested for consideration in making allocations of regional allowables to the various fields producing crude oil of like quality:

SUGGESTED METHOD FOR ALLOCATING REGIONAL ALLOWABLES TO FIELDS

First: Deduct nonproratable production from the regional allocation.

Second: Allocate the remainder according to the following formulas, employing each factor separately and combining the weighted results to obtain the proratable quota.

First year	Proratable quota	=	80	per cent by	market demand	+	20	per cent by	optimum rate
Second year	Proratable quota	=	60	per cent by	market demand	+	40	per cent by	optimum rate
Third year	Proratable quota	=	40	per cent by	market demand	+	60	per cent by	optimum rate
Fourth year	Proratable quota	=	20	per cent by	market demand	+	80	per cent by	optimum rate
Fifth year	Proratable quota	=	0	per cent by	market demand	+	100	per cent by	optimum rate

Third: Add the nonproratable production to the quota set for proratable output, thus arriving at the field allowable.

Note: In the first and second years developed reserve may be used as a base for allocation instead of the optimum rate, switching to the optimum basis in the third year.

In special cases it may be necessary to make departures for a small part of the demand where rigid specifications for certain qualities can be met only from particular crudes, but such situations are either well known or could readily be ascertained.

Summary

The purpose of this paper is not to present a perfected system to supplant the one in use, but to outline the principles, now implicit in the existing system but only imperfectly applied, that may serve as a guide to influencing future changes. The purpose, further, is to stimulate discussion and to induce many minds to apply themselves to this matter, for only in such manner can progress be attained.

The principles and procedures involved may be summarized as follows:

1. Proration should be grounded on conservation, with equity and equilibrium as subordinate but essential supports.
2. The central principle of conservation is the optimum rate of production and this engineering criterion should gradually supersede economic criteria to the fullest extent possible in the techniques of allocating market demand.
3. The maintenance of equity and equilibrium requires that changes in established practices shall be graduated transitions.
4. Forecasts of total market demand by the U. S. Bureau of Mines should be founded on the broad base of total demand for all oils and recommendations made to the states by grades of crude.
5. The allocation of total market demand to states, as now done on the trade-channel procedure, is workable but the optimum factor should be gradually accorded weight in the formula.
6. State allowables should be broken down into regional quotas to serve as the basis for computing field allowables.
7. Field allowables should be derived from regional allowables and established on a basis gradually shifting to a common ratio to optimum rates.
8. The community character of the market for each regional group of fields should be fully recognized and applied to the problem of special allowables.
9. The evolution away from the well as the unit of proration within the individual field should be encouraged in favor of the developed reserve as a function of the optimum rate.
10. The developed reserve may be used in place of the optimum rate for 1 or 2 years, pending the completion of the engineering work necessary to develop optimum-rate standards.
11. The Interstate Oil Compact Commission can play an important part in coordinating the work essential to an improvement of the allocation system.

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended Dec. 7 High	Week ended Dec. 7 Low	Week ended Dec. 7 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
58½	38½	50	48½	48¾	Amerada Corp.	788,675	N.P.	50cQ	10-31-40	$2.00	$1.56	$2.07	74½	50	78	55
27⅛	18¼	24	22¼	24	Atlantic Refining	2,663,999	$25	25cQ	12-16-40	1.00	1.66	1.40	24⅝	18⅛	27⅜	17⅝
16⅝	8½	10⅜	10¼	10⅜	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.25	1.39	—.85	21	10¼	23¾	12⅛
13⅜	7⅛	9⅜	8⅝	9	Barnsdall Oil Co.	2,558,779	$5	15c	12-9-40	.90	.76	1.26	19½	11⅛	21⅝	10¼
8⅛	5½	6	5¾	5⅞	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	11-15-40	.80	.55	.55	9⅞	6½	10¾	7
25	16⅛	20⅛	19⅛	19⅝	Continental Oil of Delaware	4,682,572	$5	25cQ	12-23-40	1.00	1.35	1.10	31½	19⅞	35¾	21¼
6⅞	3⅜	4½	4	..	Houston Oil	1,098,618	$25	....	10-17-30		.43	.83	9⅜	4½	9¾	5
14⅜	9	11½	11¼	11⅜	Lion Oil Refining	435,815	N.P.	25cQ	10-10-40	1.00	1.50	2.09	18⅛	10	25⅛	15⅝
17⅜	11½	14¼	13⅞	14	Mid-Continent Petroleum	1,857,912	$10	40c	12-2-40	.60	1.42	.56	18	11⅛	22⅝	12¼
11¾	7⅛	11¼	10¼	10⅝	Mission Corporation	1,378,645	$10	25c	12-20-40	.65	.87	1.04	14⅞	8¾	17¾	10⅝
9¾	4⅝	6⅞	6½	6¾	National Supply	1,155,517	$10	....	12-22-37		—.87	—.79	15½	5⅝	23	12½
8¾	5⅜	7¼	6⅝	7¼	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	10½	6	14⅞	8⅞
8⅞	5½	7¼	7¼	7¼	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	.40	.81	1.22	11⅞	7	15⅞	10¼
10½	6¾	..	..	..	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	....	1.10	.08	8¾	5	9¼	6¼
41¾	27⅛	40⅜	39½	40⅜	Phillips Petroleum	4,449,052	N.P.	50cQ	11-30-40	2.00	2.21	2.03	46½	31¼	44⅜	27¼
22⅜	15	18	17¼	17¼	Plymouth Oil Co.	1,038,633	$5	25c‡	12-23-40	$1.40	2.38	2.59	24	17⅛	25⅜	15
11½	6¾	8⅛	7⅝	8⅛	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11¾	6⅛	13½	8¼
9¼	5⅞	9⅛	8¾	8¾	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.65	.51	10¼	6⅝	9⅞	5
20	11	14⅞	14¼	14¼	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	12-14-40	1.00	1.40	1.52	24⅜	15½	27½	15½
13⅛	7⅝	10⅞	10⅛	10⅜	Shell Union Oil	13,070,625	N.P.	50c	12-20-40	.50	.77	.72	17¼	9⅞	18⅜	10
23¼	12¼	20¾	20	20¾	Skelly Oil	995,349	$15	50c	12-20-40	.75	1.99	2.27	29½	15½	34¾	18½
12½	7⅛	8⅝	8⅛	8⅜	Socony-Vacuum	31,206,071	$15	25cSA	9-16-40	.50	1.10	1.29	15⅛	10¼	16⅜	10⅜
26⅛	16¼	18	17⅜	17¾	Standard Oil of California	13,003,953	N.P.	25cQ	12-16-40	1.10	1.38	2.22	33⅝	24¼	34⅞	25⅛
29	20¾	26⅜	26	26¼	Standard Oil (Indiana)	15,272,020	$25	50c†	12-16-40	1.25	2.23	1.82	30	22¾	35½	24¾
46½	29⅞	34½	32¾	33¾	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.25	3.26	2.86	53½	38	58⅜	39¾
65⅞	46¾	53¼	51½	53¼	Sun Oil	2,434,863	N.P.	25cQ	12-16-40	1.00	2.74	1.07	66	45¾	65⅛	45
2½	1⅛	1⅝	1½	1⅝	Superior Oil Corp.	1,388,979	$1	10c	12-28-38		.04	.24	3⅝	1¾	4¼	1¾
47⅝	33	39⅜	38	38½	Texas Corp.	10,876,139	$25	50cQ	1-2-41	2.00	3.02	2.13	50¾	32½	49⅝	32⅝
4¼	2½	3½	3¼	3½	Texas Gulf Producing Co.	888,146	N.P.	10c	12-14-40	.20	.69	.86	5¾	3¼	5⅞	2⅝
8⅝	5⅜	6¼	6	6	Texas Pacific Coal & Oil	888,236	$10	10c	12-2-40	.40	1.00	1.16	11⅜	7	12½	7
12	8¾	9¾	9¼	9½	Tide Water Associated	6,371,827	$10	15c	12-2-40	.80	1.05	1.28	14¼	9½	15¾	10⅛
17½	12	13¼	12¾	12⅞	Union Oil Co. of California	4,666,270	$25	25c	11-10-40	1.05	1.25	1.47	19¾	15⅛	22½	17⅛
29⅞	22¾	27½	27⅜	27⅜	Union Tank Car Co.	1,177,381	N.P.	45c	12-2-40	1.30	2.07	1.16	24¼	20⅛	23½	20
3⅝	1¾	1⅞	1⅞	1⅞	Wilcox Oil & Gas	470,768	$5	10c	2-15-40		.77	.52	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 4 per cent in stock. ‖Also 2½ per cent in stock. ¶Also 1½ per cent in stock. —Deficit.

New York Curb Exchange

1940 High	1940 Low	Week ended Dec. 7 High	Week ended Dec. 7 Low	Week ended Dec. 7 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
10⅜	4½	6⅞	5⅜	6⅞	American Republics Corp.	1,308,049	$10	10c	7-11-38	....	$0.14	—.22	11¾	5½	11¾	5
3¼	1⅜	1⅞	1½	1⅞	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	7¼	2½	10¼	4⅞
43	28	38½	38⅛	38½	Buckeye Pipe Line Co.	200,000	$50	$1	12-14-40	$2.50	3.13	2.36	34¾	26½	39	22½
117	95	110	108¾	110	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	12-16-40	6.00	7.87	5.32	130	108⅝	128	97
6¾	4	5¾	5½	5⅝	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	9¼	4¼	11	5⅛
1⅞	1⅛	⅞	⅞	⅞	Cosden Petroleum	465,332	$1	....	....	....	....	....	2¼	½	2⅜	⅞
24¼	11⅝	14	12¼	13⅛	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	28	16¾	27½	17⅛
4⅜	2⅞	3½	3½	3½	Darby Petroleum	351,390	$5	25cSA	1-15-39	.25	.03	.69	7⅛	3⅝	10¼	5½
2	⅞	1	⅞	⅞	Derby Oil & Refining	263,162	N.P.	....			—.37	—.91	2⅝	1½	3½	1½
31	22	..	..	..	Eureka Pipe Line	50,000	$50	50c	11-1-40	2.00	.63	—.37	23	15⅛	31	16
39⅞	25⅛	33¾	31½	32	Gulf Oil Corp.	9,076,202	$25	25cQ	10-1-40	2.00	1.69	1.43	45⅛	29¼	46⅞	33
68	47⅛	63⅞	62	63¾	Humble Oil & Refining	8,987,840	N.P.	62½c	12-26-40	2.00	3.33	3.98	71	52½	72⅝	56
12⅜	5½	6½	6	6	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	1.00	.71	.96	17	11⅜	19½	14⅛
7¾	3	3⅜	3¼	3⅜	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	.50	.33	.47	7¼	5½	9⅜	6
19⅜	8¼	9¾	8⅝	8⅞	International Petroleum	14,324,088	N.P.	50c	12-2-40	1.75	1.19	1.98	27½	17	31¼	21
2⅜	1⅝	..	..	..	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.06	.14	3⅜	2⅛	5	2⅛
10⅜	7⅝	9¾	9	9	Lone Star Gas	5,518,347	N.P.	30c	12-21-40	.70	.98	.88	10½	7⅛	10⅜	6⅝
6¼	3¾	4½	4¼	4½	Louisiana Land & Exp.	2,966,762	$1	5c	12-16-40	.35	.22	.45	7¾	4	9⅜	6½
17	9¼	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	10-10-40	1.00	1.52	2.28	17	14½	24	16
8½	6½	7⅞	7½	7⅞	Midwest Oil Co.	998,474	$10	45c	12-16-40	.90	.99	.93	8¾	6⅝	9¾	6⅝
6¼	4⅞	5½	5½	5½	Mountain Producers	1,593,584	$10	30cSA	12-16-40	.60	.70	.62	6	4⅞	5¾	4½
13⅛	10	11½	11⅛	11¼	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-40	1.00	.95	.84	14	11¼	14⅝	11½
12½	8¾	10	10	10	National Transit	509,000	$12.50	50c	12-16-40	.95	.91	.88	9½	7¼	9¼	6½
1¼	¾	1⅛	1	1	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1⅜	1	2⅝	1½
7¾	5¼	6½	6	6	New York Transit	100,000	$5	25c	9-20-40	.40	.88	.16	6	4	4½	3½
9⅞	6	..	..	..	Northern Pipe Line	120,000	$10	40c	12-2-40	.30	.31	.24	7	4½	6	4
5½	2½	3⅜	3⅛	3⅛	Pantepec Oil	2,856,872	$1	....	....	....	....	....	7⅝	4	7⅜	3½
3¼	1¼	..	..	..	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	5	1¼	4½	1⅝
2¾	1½	2¾	2¾	2¾	Ryan Consolidated	298,931	N.P.	....	....	....	.16	.29	3	1⅞	4	2⅛
11¾	4¾	6	5½	6	Southern Pipe Line	100,000	$10	25c	9-3-40	.30	.25	—.27	4⅞	3½	5⅜	3¼
44	28	40	37	37	South Penn Oil	1,000,000	$25	$1.87½†	12-20-40	3.00	2.84	1.44	40½	26¾	39	28¾
35	21	23	23	23	Southwest Penna. Pipe Lines	35,000	$50	50c	9-16-40	2.00	2.06	—.41	23	18	22¼	16½
20⅞	16½	19¼	18⅝	19¼	Standard Oil of Kentucky	2,604,790	$10	55c†	12-16-40	1.30	1.53	1.45	20½	17¼	18⅜	15
41¾	26¼	35¼	31⅛	35¼	Standard Oil of Ohio	753,740	$25	25c	9-14-40	1.50	6.64	1.81	32¾	17	22⅝	16¼
2	1⅜	1⅜	1½	1⅝	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2¾	1¾	3¼	2
3⅛	2	2⅛	2¾	2¾	Texon Oil & Land	936,024	$2	10c	12-30-40	.10	.49	.56	4	2⅝	5¼	3½
3⅜	2	2⅛	2	2	Transwestern Oil Co.	750,000	$10	....	....	....	—1.42	.12	6	2½	5¼	2⅝
2⅛	1/16	1	⅞	1/16	United Gas Corp.	7,818,959	$1	....	....	....	—.55	—.51	3⅜	1½	5¼	2⅝

†Includes extras. —Deficit.

Personal Paragraphs

N. N. JONES, district engineer at Overton, Tex., for Humble Oil & Refining Co., has been elected president of the East Texas section of the American Institute of Mining and Metallurgical Engineers. Mr. Jones received his degree in petroleum engineering from Louisiana State University in 1930, and has since been employed by Humble. He worked for a while in the Smackover field in Arkansas, and for a while in the gas-measurement department of the Arkansas Natural Gas Co.

W. G. RITZER has been appointed vice president and general manager of the Border Oil & Gas Co., Olean, N. Y.

J. S. GAYNOR, division exploitation engineer for Shell Oil Co., Inc., Houston, Tex., has returned from a vacation to Miami Beach, Fla.

AL CHANEY, geologist, Pure Oil Co., has returned from the Mayo Clinic at Rochester, Minn., to St. Joseph, Mo., his health greatly improved.

E. L. BLINN, formerly head of the title section for Shell Oil Co., Inc., at Houston, Tex., has been promoted to assistant manager of the crude-oil department.

J. M. WEST, chairman of the board of West Production Co., Houston, Tex., was appointed chairman of the board of directors for the Texas Technological College, at Lubbock, Tex., last week.

HERMAN LAYER, president of Pierce Petroleum Co., with offices in Los Angeles and San Francisco, and who is incorporating a new operating company, recently returned from Mexico City on a combined business and pleasure trip.

OLIN CULBERSON, Texas railroad commissioner-elect, will be honored at this week's meeting of the Lion's Club at Grandfalls, Tex. Mr. Culberson will speak at the banquet, which will be attended by delegates from many towns in the Permian basin.

PAUL RYAN, of Cleveland, Ohio, president of the National Refining Co., suffered leg, arm, and head injuries in the crash of an airliner near Chicago December 5.

J. BURR GIBBONS, director and former general manager of the International Petroleum Exposition, has formed the Gibbons Advertising Agency, Inc. The headquarters of the new concern are in Tulsa, and LESLIE E. BROOKS, publicity director of the International Petroleum Exposition, is vice president. For about 10 years Mr. Gibbons was vice president and partner of Rogers, Gano & Gibbons, Inc.

JOSEPH E. PROCTER, drilling superintendent for William Helis, with headquarters at New Iberia, La., has returned from Greece, where he has been stationed for the past year. Mr. Procter was ordered to leave when war was declared.

JUDGE J. C. HUNTER, Abilene, Tex., member of the Interstate Oil Compact Commission, is being prominently mentioned as the new highway commissioner of Texas, to succeed Harry Hines, whose term of office expires in February.

JOHN S. IVY has resigned as head of the geology and land department of Union Producing Co. He will devote his entire time to private business interests in Houston, Tex., and elsewhere. Mr. Ivy began work with predecessor companies of the present Union Producing Co. in 1923. He served as chief geologist for Palmer Corp. of Shreveport, La., from 1923 until 1928, when he was appointed to a similar position with Louisiana Gas & Fuel Co. In 1930 he was named chief geologist for United Gas Public Service Co. Since 1937 he has served Union Producing Co. as a director and vice president.

TOM WILLIAMS, associated with W. O. ALLEN, has been transferred from Jackson, Miss., to North Dakota.

ERNIE COCKRELL, engineer for Texas Co., at Houston, Tex., has been transferred to the Manvel field as district engineer.

DAVID HOLMES, for the past 9 years a driller in the Turner Valley field, Alberta, Canada, has returned to his former home in Petrolia, Ont., Canada.

ARTHUR IDDINGS, Darlington, Md., general manager for the International Petroleum Co., in Peru, sailed with Mrs. Iddings from New York last Friday on the Grace liner, Santa Lucia, for Peru.

D. E. SANDERS, Bixby, Okla., oil man, has been relieved of a 5-day siege of hiccoughs that threatened his life. Relief came when an operation was performed which crushed the victim's threnic nerve. Mr. Sanders is well on the road to recovery.

V. C. LARSEN, foreman of the southern division of General Petroleum Corp. pipe line, has been promoted to superintendent of the company's northern division and in his new capacity will maintain offices in Bakersfield, Calif. He succeeds R. R. Dafoe, deceased.

E. O. BENNETT, chief production engineer, Continental Oil Co., Ponca City, Okla., was in New Orleans on Tuesday of this week to deliver a paper before the thirty-third annual meeting of the American Institute of Chemical Engineers on "Economic Design and Operation of equipment for Pressure Maintenance and Distillate Recovery."

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Real estate men declare that as a result of the oil boom, Tulsa needs 1,000 new buildings in addition to the 1,000 now under construction.

Harry F. Sinclair, in Kansas City, says that a rock road between Kansas City and Oklahoma towns would do more to bring about better trade relations than an interurban system.

David White, U. S. Geological Survey, states that it is the opportunity and duty of the driller to be on the lookout for potash salts in drill cuttings and brines.

20 YEARS AGO

Completion of two new gas wells by the Prairie Oil & Gas Co., northwest of Amarillo, Tex., makes the proven gas territory 50 miles long and 10 miles wide with a daily capacity of 400,000,000 cu. ft.

In compliance with recent rulings of the state Department of Conservation, operators of carbon-black plants in the State of Louisiana will be compelled to establish gasoline plants in connection with their carbon-black plants. This will require an expenditure of from $500,000 to $750,000 during the next 12 months.

Prices for leases near the Humphreys well at Mexia, Tex., have risen to $1,000 an acre for land 1 mile from the well and $50 an acre for land 5 to 6 miles away.

10 YEARS AGO

The Prairie Oil & Gas Co. announces that it will cease to be a buyer of crude after December 31.

The California Supreme Court unanimously declares that the California gas-conservation law is constitutional and that "because of the peculiar nature of oil and gas, the public has a definite interest in their preservation from waste and destruction."

JOHN B. MILLS, Carter Oil Co. geologist at Jackson, Miss., was recently married, and JOE J. URI, geologist with Arkansas Fuel Oil Co., will shortly be married to a Mississippi girl.

H. G. CORNATZER, assistant treasurer of Lone Star Gas Co., has been appointed an associate member of the advisory board for draft registrants. He will assist registrants in preparing questionnaires they have received.

LELAND V. STANFORD, vice president in charge of exports, Sinclair Refining Co., underwent an operation in Johns Hopkins Hospital, Baltimore, Md., recently, to correct an injury suffered while playing baseball several years ago.

J. P. STRAIGHT, superintendent for Cities Service Oil Co. in the East Texas field, and chairman of the East Texas chapter of the A.P.I., has been named a member of the Gladewater, Tex., Chamber of Commerce board of directors.

CHARLES ALFORD, chief gager, Humble Pipe Line Co., was elected last week as chairman of the Mid-Continent chapter of the American Petroleum Institute. CLYDE CONOVER, Cities Service Oil Co., Pampa, Tex., was elected first vice chairman, and R. C. KAY, Amarillo, Tex., second vice chairman. S. C. HANKS, Humble Oil Co., Pampa, was named secretary.

E. H. MOORE, prominent Tulsa oil man, was host to 400 business men at a dinner in Tulsa on December 6. The HON. SAMUEL B. PETTENGILL, former member of Congress (Indiana), was the principal speaker. Mr. Pettengill is now the director of the National Committee to Uphold Constitutional Government. Tentative plans were made for the organization in Oklahoma of an affiliate of the National Committee.

Fast Promotion Record

Effective December 1, Walter H. Spears was appointed to the position of head of the geology and land departments of Union Producing Co., Shreveport, La. In succeeding John S. Ivy, who resigned on that date, Mr. Spears adds another promotion to a rapidly successive series in recent years.

WALTER H. SPEARS

In 1925 he graduated from the University of Wyoming with a major in geology, and followed through with a year of graduate work at Wyoming. He then became associated with the Huasteca Petroleum Co. at Tampico, Mexico, spending a little over a year in that country. Upon his return to the United States he entered the employ of the Pan American Petroleum & Transport Co. as geologist, and returned to Latin America where during 1929 and 1930 he was assigned to duty in Nicaragua and Mexico.

His first association with the United Gas companies was in 1931, when he became a United Gas Pipe Line Co. geologist in the general office in Houston, Tex. He was promoted to assistant superintendent of exploration and development in 1937 and served in this capacity until January 1, 1940, when he was named district manager at Houston.

In October of this year, with the moving of the general offices of the companies to Shreveport, he was appointed to the position of head of the geological department of the general office of the affiliated Union Producing Co. in Shreveport. His latest promotion places him in charge of the land and geology departments of the Union Producing Co., United's production company.

Mr. Spears was born at Morriston, Ill., and was educated in the public schools of Goff, Kans.

J. A. McCARTY, petroleum engineer for Gulf Oil Corp., formerly stationed at Webb City, Okla., is now stationed at Fairview, Okla.

MAJ. GEN. WALTER B. PYRON, vice president, Gulf Oil Corp., Houston, Tex., has been called to active duty with the Texas National Guard.

OSCAR HUDSON, geologic scout with Midstates Oil Corp., will soon be transferred from Jackson, Miss., to either Tulsa or Wichita, Kans.

HAROLD B. FELL, executive vice president of the I.P.A.A., addressed a state-wide meeting of the membership of the I.P.A.A. at Wichita, Kans., December 10.

GLEN M. RUBY, engineer and geologist long identified with the oil industry in South America, was the guest speaker at the last monthly meeting of the Los Angeles, Calif., chapter of A.I.M.E.

A. L. BRADEFORD, United Gas Pipe Line Co., has been elected president of the Shreveport Petroleum Electric Club. The new vice president is MORRIS CHAMBERS, Standard Oil Co. of Louisiana.

EMIL HUGUENIN, assistant engineer in the Los Angeles office in the Department of Natural Resources, Division of Oil and Gas, is being prominently mentioned as the successor of J. B. Case, deputy state oil and gas supervisor who recently passed away.

B. A. HARDEY, Shreveport, La., commissioner of conservation of Louisiana, has indicated that he would return to private business after the state reorganization plan has gone into effect, probably next month. Among those mentioned as his successor are GEORGE WILSON, attorney for the conservation department, and J. A. PEACOCK, executive assistant to the commissioner.

J. W. WOOD and LESTER CALLAHAN, of the Wood-Callahan Oil Co., with production in several fields, have been issued a temporary restraining order to prevent the city of Long Beach, Calif., from converting to its use an abandoned right-of-way of the Pacific Electric Railway on which they have a lease.

Shifts: H. H. TEMPLE,, J. & J. Oil Co., from Texarkana, Ark., to Shreveport, La.; R. J. WOLFE, drilling contractor, Long & Wolfe, from Dallas, Tex., to Tyler, Tex.; J. O. RUNDLE, superintendent, Loffland Brothers, from Opelousas, La., to Wiggins, Miss.; W. D. MORGAN, superintendent, C. A. Lee Drilling Co., from Centralia, Ill., to Grayville, Ill.; J. G. HAMMOND, geologist, Brown Geophysical Co., from Vicksburg, Miss., to Jackson, Miss.; L. M. WILSHIRE, geologist, Skelly Oil Co., from Rockport, Mo., to Tulsa; R. W. FORD, superintendent, Harbar Drilling Co., from Lyons, Kans., to Parco, Wyo.; A. ROBERT LEAS, superintendent, Socony-Vacuum Oil Co., C. A., from Guanta, Venezuela, S. A., to Lawrenceville, Pa.; R. E. EAKIN, Standard Oil Co. of New Jersey, from London, England, to New York City; M. D. HARRIS, manager, Sohio Pipe Line Co., from Cleveland, Ohio, to Fitchburg, Mass.; W. L. McCLOY, JR., engineer, Sohio Production Co., from LeRoy to Medina, Ohio.

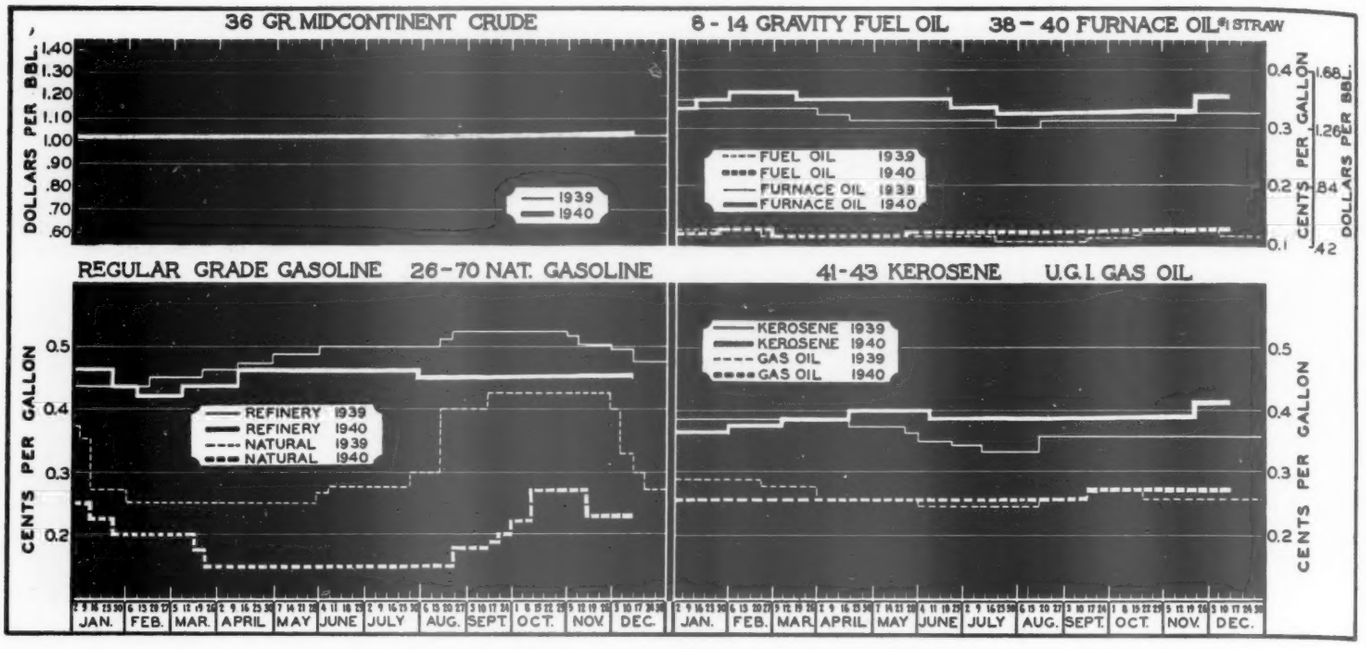
FRED B. BRANSON, assistant auditor and assistant secretary of the Gulf Oil Corp. and Gulf Refining Co., Tulsa, has been transferred to the general office at Pittsburgh, Pa. He is now general auditor, production and pipe-line divisions. He is succeeded at Tulsa by E. D. LOUGHNEY.

JOHN W. INKSTER, of Shell Oil Co., Inc., was named president of the Kansas Geological Society at its recent meetings in Wichita, Kans. He succeeds ANTHONY FOLGER, of Gulf Oil Corp. J. P. McKEE, Wichita geological consultant, was elected vice president, succeeding HAROLD O. SCHMEDLEY, of Skelly Oil Co. Reelected was LEE H. CORNELL, of Stanolind Oil & Gas Co., as secretary-treasurer.

BONNEAU PETERS, chief scout for Louark Producing Co., Shreveport, La., and president of the Shreveport "Sports" in the Texas League, attended the annual minor-league convention of the National Association of Professional Baseball Leagues in Atlanta, Ga., last week.

A. D. SCHWANDER, of Humble Oil & Refining Co., Houston, Tex., was injured in an automobile accident December 4 while en route from Houston to Laredo, Tex. The accident was caused by a tire blowout. Mr. Schwander was taken to a hospital in Laredo where it was found he suffered cuts and bruises about the head and body.

EFRAIM BUENROSTRO, minister of national economy in Mexico under former President Cardenas, has been appointed general manager of Petroleos Mexicanos, the Mexican Government petroleum agency. The appointment was made by Pres. Manuel Avilo Camacho, who took office December 1. Mr. Buenrostro succeeds VICENTE CORTES HERRERA.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Distillate Fuel-Oil Shipments Feel Restraint of Moderate Weather

By H. STANLEY NORMAN

DEMAND for distillate fuel oils, the feature of petroleum markets in the Group 3 territory for 3 weeks, appeared to be settling back slightly at the start of the week. The deflection from the rapidly rising demand to a more moderate rate is considered temporary in character. Temperatures have moderated in the past few days in large consuming states of the Middle West creating a lull in distribution.

Constant replacement of distillate stocks as fuel moved into hands of consumers has been the general practice during early weeks of the winter. Buyers are attempting to avoid the "squeeze play" which developed last winter by keeping their storage filled.

Distillate Prices Firm

The wave of buying which immediately followed the severe temperature drop in November has subsided slightly, although shipments are moderately brisk. Temperatures were reported rising in Minnesota and Wisconsin early this week with weather forecasts indicating at least a few days of mild weather. Buyers who have gaged purchases in the open market to the approximate rate of distribution were quick to respond to the prospects for lower consumption for a brief period. Sales from week to week are depended upon to empty the storage which will receive incoming shipments and any change in the weather is certain to register without delay on the buying end.

Refiners are holding their current prices without difficulty. Shipments are moving without interruption to contract customers, indicating that the acute sensitivity to weather is centered in the spot market. Buyers dependent on the open market for at least a part of their requirements recognize the probability that another tank-car price advance will accompany period of activity such as developed in November.

Refined Oil Market Barometer

Movement of natural gasoline to lower Gulf Coast refining centers was maintained this week at the improved rate which developed early in December. Prices for refinery products are steady at unchanged levels in most centers of supply. Refiners are watching the crude-oil market in Texas with renewed interest, apparently feeling that major adjustments may develop.

MID-CONTINENT: Natural-gasoline movement to the Gulf Coast has improved in the past 2 weeks.

GULF COAST: Tanker rates prevent appreciation of eastern fuel-price gains.

CALIFORNIA: Fuel oils firm. Gasoline demand running ahead of expectations.

PENNSYLVANIA: Kerosene prices advanced one-eighth of a cent by most suppliers.

CHICAGO: Fuel oils are firm. Buyers watching Texas crude prices.

The effort to lift tank-wagon prices in the southern states has been only moderately successful. One of the large marketing companies in Texas declined to elevate tank-wagon prices a week ago when an advance was launched by the Texas Co. One of the other companies which originally advanced returned after 3 days' trial to the former prices. Inability of the tank-wagon market to make a sustained stand in higher ground calls attention to the dealer voice in current practices.

Motor-fuel prices among Group 3 refiners are reasonably steady. There are only occasional reports of tank-car sales below the currently quoted prices.

Feature of the motor-fuel market is the rate of shipment which is clinging reasonably close to the summer demand. Northern states, where winter weather has taken a sustained position, are no exception to the general appearance of higher consumption. Refiners report that customers in the North are feeling the result of industrial activity emanating from the defense program.

Natural Moving South

Revival of natural-gasoline demand in the Corpus Christi refining district continued this week, although the volume is substantially lower than experienced in October. Base prices of 2 cents in Texas and 2.25 in Oklahoma for 26-70 material are holding without particular pressure. Intrastate prices are higher for plant operators enjoying favorable locations in Kansas and Oklahoma.

Coastwise transportation rates are receiving more than ordinary attention from refiners in the Mid-Continent district. There is little doubt that increasing costs of transporting products by water to North Atlantic ports has exerted growing pressure of Gulf Coast refiners. It has been impossible to pass the drastic increase in transportation costs along to northern buyers. No reports have been received so far of inland movement of products from the Gulf beyond normal spheres of influence. There is agreement, however, that slight margin remains beyond current tanker charter rates and the profitable operation of shipping products from the Gulf to large inland consuming centers.

Heating oil can be moved from the central western refining centers to the Atlantic seaboard, under recently reduced rail rates, for approximately 75 cents per barrel.

Record Coastwise Tanker Rates Dominate Eastern Oil Markets

By J. P. O'DONNELL

NEW YORK, Dec. 10.—The rapid advance in tanker rates continued last week as prices for both clean and dirty bottoms were raised, the former to a new all-time high of 80 cents per barrel for light heating oil. The reported last-paid rates for clean tankers in coastwise service were 70 cents per barrel for gasoline, 75 cents for kerosene and 80 cents for light fuel, while the new high in dirty-tanker rates was on the basis of 60 cents per barrel for fuel oil.

The record rates on clean tankers were set by the chartering of the American tanker, Elizabeth Kellogg, of 3,135 tons net, in midweek. It is scheduled for loading December 24. The peak in dirty-bottom rates was set by the chartering of the 3,105-ton Catahoula which is likewise scheduled for December loading. The latest clean rates represent an increase of 5 cents per barrel and the dirty rates, an increase of 10 cents. The bulk of recent chartering has been in clean boats, thus accounting for the more rapid rise in their rates since late September.

So far this fall, clean-tanker rate for No. 2 fuel oil has advanced 59 cents per barrel, an increase of almost 300 per cent. The present rates are equivalent to almost 2 cents per gallon and consequently have contributed greatly to a strengthening of refined oil prices in the East Coast district. Other products have likewise shown an improvement and kerosene and gasoline are both very strong. Because of the fact that there are ample supplies at hand in the East Coast district, prices have not matched the advance in tanker rates but further gains in product prices are freely predicted.

Several charters were completed last week that are of more than ordinary interest. Among them was the chartering of the 3,596-ton Alpha for a full year on the basis of 50 to 57 cents per barrel depending on the gravity of the oil. Two large Norwegian tankers of 15,000 and 12,500 tons were chartered for South American trade at $4.50 per ton. Another Norwegian tanker, Kosmos II, 9,794 tons, was reported chartered for four consecutive Venezuela-north-of-Hatteras voyages at 40 cents per barrel for fuel oil. Another 5,889-ton Norwegian boat, the dirty-tanker Thorshovdi, was chartered for a voyage from San Pedro, Calif., to Balboa, at 22½ cents per barrel.

The combination of the cold wave which hit the northeastern area last week and the advancing rates imparted additional strength to light heating oil and, it was predicted, the current tank-car price of 4.7 cents per gallon would soon be advanced by a number of suppliers to 4.9 cents. Despite the current high level of heating-oil stocks on the East Coast, some small suppliers have been caught short and their acute need for supplies has contributed to the rise in tanker rates and the higher prices. Demand is making substantial inroads on supplies on hand and, in the last week of November more than 750,000 bbl. of gas oil and distillate fuel oil were withdrawn from East Coast district storage. Standard Oil Co. of New Jersey advanced its tank-wagon fuel-oil prices in New Jersey 0.2 cent making them 7.9 cents for No. 1 and 6.7 cents for both Nos. 2 and 3 fuel oil.

Demand for gasoline is also holding up longer than anticipated and in the last week of November another 183,000 bbl. were removed from East Coast storage, bringing the total down to 17,409,000 bbl., more than 500,000 bbl. under the corresponding 1939 level. This is another product in which good demand and high transportation rates are maintaining prices. Socony-Vacuum Oil Co., Inc., has announced that it advanced tank-wagon prices in four sections of the metropolitan New York area, Manhattan, Bronx, Queens and Brooklyn, 0.5 cent effective Tuesday, December 10. Metropolitan New York prices have been subnormal for some time and were not among those areas affected by the average 0.3-cent advance.

Refinery and bulk-terminal gasoline prices have not been changed, however, and remain at 5.5 to 5.75 cents, levels at which they have been quoted for some time, for 72-octane material. The normal seasonal softness in motor-fuel prices has failed to develop this year as yet, however, and the minimum price of 5.5 cents per gallon is reported well maintained.

Heavier fuel oils have not yet benefited by the advancing tanker rate so far as price improvement is concerned. Bunker C fuel oil remains quoted at from $1.15 to $1.25 per barrel but there were indications that the low would be advanced to $1.20 if the currently high transportation rates are maintained. Demand for Bunker C fuel oil is reported satisfactory.

Demand for kerosene was also reported to be well maintained and the recent advance of 0.2 cent in refinery and terminal prices is well established. Kerosene and light and heavy fuel oils are supported by future commitments by buyers who anticipated further advances in prices when East Coast stocks are reduced further. The same is true of diesel oil, currently quoted at $1.95 in barrels and 4.7 cents per gallon at shore plants, the latter an advance of 0.2 cent.

The wax market, which enjoyed a spurt in the early fall, is giving evidence of weakness and prices have been revised downward by several suppliers. The declines have been limited to crude-scale wax, prices of which are now quoted at 2.6 and 2.75 cents per pound, off a quarter of a cent from previous quotations. Fully refined grades which were unaffected by the earlier rise in the market are also unaffected by the current weakness so far.

Conflicting trends were apparent in the export market. Canada's plan for increasing its self-sufficiency from a refined-products standpoint drew attention of exporters.

Gulf Coast Markets

HOUSTON, Tex., Dec. 10.—Reductions in posted prices for crude in a number of South Texas fields by various independent companies the past week have caused increased uncertainty in the Gulf Coast refinery market outlook, but so far there has been no further weakening of product prices as a result of the crude cuts.

The cuts generally have been looked upon as adjustments to offset low refinery prices already in effect.

Refinery markets continue to mark time, with little new buying reported. Although there is a fair volume of material being moved it is mainly through established outlets. Due to the high tanker rates to the Atlantic seaboard, prices at the Gulf are unable to reflect the strengthening on the East Coast of fuels and burning oils. Gulf refiners continue to quote 80 cents for Bunker C fuel and 3¼ cents for No. 2 heating oil. As yet there has been no tendency on the part of suppliers to weaken on these products, in view of expected increased demand.

Kerosene is slightly easier with material available at 3¾ cents.

Gasolines are unchanged with very little interest in these products. Suppliers generally do not see prospects for any pickup, and on the other hand no particular complaints of distress are heard.

A.P.I. Weekly Refinery Statistics

Week Ended December 7, 1940

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	17,325,000	11,883,000	15,688,000	542,000
Appalachian	91.0	3,229,000	337,000	550,000	122,000
Ind., Ill., and Ky.	90.2	13,567,000	3,107,000	5,076,000	547,000
Okla., Kans., and Mo.	76.9	6,609,000	2,170,000	1,407,000	253,000
Inland Texas	59.6	1,643,000	1,588,000	421,000	122,000
Texas Gulf	89.2	12,923,000	8,520,000	8,326,000	856,000
Louisiana Gulf	97.6	2,779,000	2,131,000	1,435,000	132,000
N. Louisiana and Ark.	51.5	463,000	479,000	330,000	44,000
Rocky Mountains	56.0	992,000	427,000	140,000	47,000
California	87.3	15,852,000	72,906,000	9,987,000	455,000
Total reported	86.2	75,382,000	103,548,000	43,360,000	3,120,000
Est. unreported	.....	5,680,000	1,805,000	945,000	340,000
*Est. total	.....	81,062,000	105,353,000	44,305,000	3,460,000
*Est. total previous wk.	.....	80,284,000	106,618,000	46,212,000	3,510,000
*Dec. 8, 1939	.....	78,162,000	109,290,000	36,946,000	3,460,000

*Bureau of Mines.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended November 30, 1940	262,679,000 barrels
Week ended November 23, 1940	*261,680,000 barrels
Week ended December 2, 1939	234,161,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.
*Revised from 261,723,000 bbl.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of December 10, 1940

Taxes

The gasoline quotations given in the following tables include the 1¼-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Dlr. tax	Incl. tax	Kero. tank wag.
Chicago, Ill.	14.6	12.6	4.5	10.0
Decatur	14.6	13.1	4.5	9.5
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	16.4	14.9	4.5	10.8
Mankato	16.0	14.5	4.5	9.0
Minneapolis	16.0	14.2	4.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.3
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	7.6
Grand Rapids	14.3	12.8	4.5	9.1
Saginaw	14.9	13.4	4.5	9.1
Evansville, Ind.	16.6	15.1	5.5	†9.8
Indianapolis	16.8	14.8	5.5	†10.0
South Bend	16.8	15.3	5.5	†10.0
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.8	11.8	4.5	8.0
St. Louis*	14.7	13.2	4.5	9.0
St. Joseph	14.9	13.0	4.5	7.9
Wichita, Kans.	13.8	12.3	4.5	7.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Dec. 2, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex fuel oil A, 1-399 gal., 6.0 cents; 400-799 gal., 5.0 cents; 800 gal. and over 4.75 cents. Stanolex fuel oil B, 1-399 gal., 6.0 cents; 400-799 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.75 cents; 1,000 gal. and over, 3.75 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Dl-vided dlr.	Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Atlantic City	11.00	12.60	4.5	7.9
Newark	11.00	12.60	4.5	7.9
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.5
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.5
Danville, Va.	14.45	16.95	6.5	9.0
Norfolk	13.25	15.75	6.5	10.5
Petersburg	13.55	16.05	6.5	11.2
Richmond	13.55	16.05	6.5	10.5
Roanoke	14.75	17.25	6.5	11.0
Charles'n, W. Va.	14.05	16.55	6.5	12.6
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	16.85	6.5	11.8
Charlotte, N. C.	16.40	15.00	7.5	10.3
Hickory	16.95	18.45	7.5	10.8
Mt. Airy	16.80	16.00	7.5	10.7
Raleigh	16.15	16.00	7.5	10.0
Salisbury	16.45	14.50	7.5	(*)
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	(*)
Spartanburg	15.80	18.30	7.5	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Net dlr.	Incl. tax	Kero. tank wag.
Atlanta, Ga.	14.0	14.0	7.5	8.0
Augusta	16.5	16.5	7.5	9.5
Macon	15.0	15.0	7.5	9.0
Savannah	15.5	15.5	7.5	9.0
Birmingham, Ala.	16.5	16.5	8.5	9.0
Mobile	15.5	15.5	9.5	8.0
Montgomery	18.0	18.0	9.5	10.0
Jackson, Miss.	16.0	16.0	7.5	9.0
Vicksburg	15.5	15.5	7.5	8.5
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	17.0	17.0	9.5	8.0
Tampa	16.0	16.0	8.5	8.0
Lexington, Ky.	15.5	15.5	6.5	9.0
Covington	13.5	13.5	6.5	9.0
Louisville	15.0	15.0	6.5	8.5
Paducah	13.0	13.0	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon: Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
*Philadelphia, Pa.	12.5	13.5	5.5	10.0
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
*Scranton	11.9	12.4	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.	...	14.0	5.5	10.5
Wilmington	...	13.5	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

*Voluntary discount of 1 cent allowed to dealers only.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Serv. sta.	Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Albany	12.2	13.2	5.5	8.0
*Met. New York, Manhat., Bronx, Queens, Brklyn., Staten Island	11.9	12.0	5.5	8.1
Buffalo	12.4	13.4	5.5	7.9
Rochester	12.8	13.4	5.5	8.5
Syracuse	12.5	11.2	5.5	8.9
Portland, Me.	11.7	11.7	5.5	8.4
Manchester, N.H.	12.8	12.6	5.5	9.2
Burlington, Vt.	12.8	13.5	5.5	8.6
Boston, Mass.	10.7	11.7	4.5	8.4
Worcester	11.3	12.0	4.5	8.5
Hartford, Conn.	11.5	12.0	4.5	7.9
New Haven	11.2	11.8	4.5	7.4
Providence, R. I.	10.7	12.2	4.5	8.4

*Does not include 2 per cent city sales tax, which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	...	Incl. tax	Kero. tank wag.
Denver, Colo.	14.5	...	5.5	10.5
Grand Junction	16.5	...	5.5	12.0
Pueblo	15.5	...	5.5	9.0
Casper, Wyo.	16.5	...	5.5	11.5
Cheyenne	14.5	...	5.5	11.0
Billings, Mont.	16.5	...	6.5	12.0
Butte	15.5	...	6.5	13.0
Great Falls	15.5	...	6.5	12.0
Helena	15.5	...	6.5	12.5
Salt Lake, Utah	16.0	...	5.5	14.0
Boise, Idaho	†18.6	...	6.5	16.0
Twin Falls	†19.6	...	6.5	16.5
Albu'que, N. M.	*16.0	...	7.0	9.5
Roswell	*14.0	...	7.0	8.0
Santa Fe	‡17.0	...	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	†11.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	16.00	18.00	8.5	11.0
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	11.0
Bristol	18.25	18.75	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.0	8.0	8.0
Muskogee, Okla.	13.5	5.5	7.0
Oklahoma City	12.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Dlr. tax	Incl. tax	Kero. tank wag.
Omaha	17.4	15.9	6.5	9.5
McCook	17.0	14.4	6.5	9.0
Norfolk	17.5	15.4	6.5	9.9
North Platte	17.8	15.5	6.5	10.2
Scottsbluff	17.4	14.5	6.5	10.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Tank-Wagon Changes

Continental Oil Co. reduced the tank-wagon price for kerosene 0.5 cent per gallon at Grand Junction, Colo., September 16. The company increased the tank-wagon price on regular gasoline at Oklahoma City, Okla., 1 cent per gallon on December 5.

Standard Oil Co. of New Jersey reduced the kerosene tank-wagon price 2 cents per gallon November 29 at Danville, Va. On the same day, the company reduced the regular gasoline tank-wagon price 0.5 cent per gallon at Charlotte, N. C.

Standard of New Jersey increased the tank-wagon price of fuel oils 0.25 cent per gallon November 25 throughout Virginia. The company reduced No. 1 fuel oil 0.5 cent per gallon at Charlotte, N. C., November 30. Standard of New Jersey advanced the tank-wagon price on medium and heavy fuel oil 0.20 cent per gallon throughout New Jersey November 29. The company reduced the tank-wagon price for No. 2 fuel oil 0.25 cent per gallon at Spartanburg, S. C., November 29.

Standard Oil Co. (Indiana) reduced the dealer price of gasoline at Chicago 1 cent per gallon October 21. A reduction of 0.5 cent October 30 at St. Louis was inadvertently applied in the retail-market tables to St. Joseph. The tank-wagon price at St. Louis is now 14.7 cents and that at St. Joseph, Mo., is unchanged at 14.9 cents per gallon.

(Continued on Page 111)

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of December 10, 1940

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400 grades:		
72-74 octane (regular)	.04½	.04⅝
63-66 octane	.04¼	.04⅝
60 octane and below	.03¾	.04

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400	.03¾	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04¼	.04½
60 octane and below	.03⅞	.04⅛

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)		.04¾
60 octane and below		.04

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04½	.04½
60 octane and below	.03¾	.04⅛
60-62 400 grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04½	.04½
60 octane and below	.03¾	.04⅛

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.06
72-74 octane	.05¾

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.05½	.07¼
54-58 U. S. Motor	.04½	.06¼

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.05½	.06½
Philadelphia	.05½	.07
Boston	.05½	.06
Baltimore	.05½	.06¾
Charleston, S. C.	.06½	.07

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane		.03½
70-72 octane	.03¼	.03½
68-70 octane		.03¼
65-67 octane	.03⅛	.03¼

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02¼
Grade 18-55	.02⅝	.02¾

NORTH TEXAS—

Grade 26-70	.02
Grade 18-55	.02⅝

CALIFORNIA—

75-85 375-390	.04½	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70	.02

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04	.04⅛
41-43	.03⅞	.04⅛

NORTH TEXAS—

41-43	.03⅞	.04

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.03⅞	.04

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.05	.05¼
45	.05	.05½

CHICAGO (Based on Group 3)—

42-44	.04	.04¼
41-43	.03⅞	.04⅛

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.053	.055

GULF COAST (domestic)*—

41-43	.03¾	.04

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03⅜	.03½
No. 3 zero to 10, 28-32	.03¼	.03⅜

NORTH TEXAS—

No. 1 prime white, 38-42	.03½	.03⅝
No. 1 straw, 38-40	.03⅜	.03½

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03¼	.03⅜

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03¼	.03½

CHICAGO (Based on Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-40	.03⅝	.03¾
No. 2 straw, 32-36	.03½	.03⅝
No. 3, zero to 15, 28-32	.03⅜	.03½

NEW YORK (Bayonne, N. J.)—

*No. 1	.053	.055
*No. 2	.045	.047
*No. 4	.045	.047

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.02⅞	.03⅛
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.50	.55

NORTH TEXAS—

U.G.I. gas oil, under 35	.02¾	.02⅞
No. 5 low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.50	.55

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02¾	.03
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 10-16	.50	.55

PENNSYLVANIA (inland refineries)—

36-40	.04½	.05

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.50	.75
10-17 (high sulfur)	.45	.65
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel	.03¼	.03½
43-47 diesel	.03¼	.03½
48-52 diesel	.03½	.03⅝
53-57 diesel	.03⅝	.03⅞
58-and-above diesel	.03⅞	.04
Diesel bunkers		1.50
Bunker C (bulk cargoes)		.80
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.048
28-30 diesel (lighterage 6¼c per bbl.)		1.95
28-30 diesel (tank cars)		.047
Bunker C (to ocean-going ships in N. Y. Harbor	1.15	1.25
Industrial fuel (tank cars)		.046

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25	.18
150-160 D, 0-10	.13½
150-160 D, 10-25	.13
100-110 D, 0-10	.13
100-110 D, 10-25	.12½
Steam refined:	
600 dark green (untreated)	.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.14½
15 pour point		.13½
25 pour point	.12	.13
Steam refined:		
600	.07	.07½
650	.08	.08½
600 flash	.09	.09½
630 flash	.11	.12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:	
150-3	.08
180-3	.08½
200-3	.08½
250-3	.10
280-3	.10½
280-4	.10
300-3½	.11
350-3½	.11½
400-3½	.12
500-3½	.12½
600-3½	.13
100-2½ paraffin oil, 10-25	.05¼
10-25 pour point:	
200-3	.08
250-3	.09½
280-3	.10
280-4	.09½

GULF COAST—

Pale oils:		
100-3	.05⅛	.05¼
200-3	.07⅛	.07⅜
300-3	.07½	.07¾
500-3½	.08¼	.08½
750-3½	.08⅝	.08⅞
1,200-3½	.08¾	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08¾	.08½
1,200-5-6	.08½	.08⅝

CALIFORNIA (moving to dom. market)

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07½	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis., at 70° F., 3 color, 400-405 flash:	
Zero pour point	.22½
10 pour point	.21½
15 pour point	.20½
25 pour point	.19
200 vis., at 70° F., 3 color:	
Zero pour point	.24½
10 pour point	.23½
15 pour point	.22½
25 pour point	.21

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.02½	.03

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.02⅞	.03
124-126 (A.m.p.) w.c. scale	.02⅞	.03

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax		.0560
128-130 (A.m.p.) wax	.0560	.0570
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.	.02⅞	.03
124-126 (A.m.p.) y.s.	.02⅞	.03
Petrolatum in barrels, carload lots:		
Dark green	.02125	.02625
Amber	.02375	.02875
Extra amber	.02625	.03000
Lily white	.04375	.05125
Snow white	.05125	.06000
Cream	.03375	.04125

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.03⅝
60-62 400		.03⅝
61-63 390	.03⅞	.04
64-66 375	.03⅞	.04

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05⅝
65-69 octane	.05¼	.05½
60-65 octane	.04½	.05

KEROSENE

GULF COAST—

41-43 water white	.03¾	.04

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:	
600 S.R. unfiltered	.16
630 S.R. unfiltered	.17
600 flash, S.R.	.18
650 flash, S.R.	.20
Bright stock:	
Light, 25 pour point	.20½

NEUTRAL OIL

200-3 color	.27
150-3 color	.25½

PARAFFIN WAX

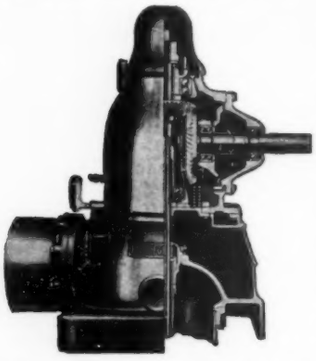
NEW YORK (prices per lb.)—

123-125 A.m.p.		.05600
125-127 A.m.p.		.05600
128-130 A.m.p.		.05850
133-135 A.m.p.		.06150
135-137 A.m.p.		.06400
Crude scale:		
124-126 w.s.	.02⅞	.03
124-126 y.s.	.02⅞	.03

EQUIPMENT PROGRESS...

Improved Gearturbo Pump Head Announced by Peerless

Improvements in the design of geared heads for deep-well turbine pumps are announced by Peerless Pump Co., 301 West Avenue 26, Los Angeles, Calif.



Development of the 1941 models include a change in bearing application. The takeoff shaft is designed to carry increased loads. Double-row ball bearings support the horizontal and vertical shafts and are placed adjacent to the spiral bevel gears. An extra heavy-duty thrust bearing supports the lower end of the geared shaft sleeve, while an additional thrust bearing supports the outer end of the horizontal drive shaft.

All four bearings are lubricated by an oil-pressure system which circulates cooled oil to both bearings and gears. To prevent leakage of oil from the outer bearing on the takeoff shaft, an oil seal is placed on the end of the bearing housing. This seal is equipped with an annular garter spring and the treated leather element is oil resistant. Annealed semisteel castings are employed to insure against distortion and misalignment of gears and other moving parts. The head assembly is streamlined and the gearing is completely housed for protection against the elements. The gears are heat treated, hardened and ground nickel alloy and lapped for specific operating tooth capacities. Standardized speed ratios of 1 to 1, 1½ to 1, 1½ to 1, and 2 to 1 are provided. This head, known as the Gearturbo, provides for connection with universal shaft to gas engines, steam engines and any other power unit.

New Oil-Immersed Disconnecting Switch Announced by G.E.

Recognizing the demand for a disconnecting switch which can be applied safely in explosive and corrosive atmospheres, the General Electric Co., Schenectady, N. Y., has developed and placed on the market an oil-immersed disconnecting switch. Designated Type SF-1 the device is available as an enclosed triple-pole, single-throw, group-operated disconnecting switch in the 5,000-volt, 600-amp. rating. It is for use indoors or outdoors as an isolating device for oil circuit breakers or motor starters in oil refineries, grain elevators, chemical plants, and similar applications. Applications have already been made at three leading oil refineries.

The new switch has many safety features. All terminals and connections are at least 6 in. under oil, and double-break contacts with ample clearances are used.

The operating lever, which may be locked either open or closed, gives positive indication of switch position. Design of the operating-shaft assembly is such that it will withstand more torque than can be applied on the operating lever by one man without the use of an extension lever.

An interlock on the operating lever prevents opening of the switch under short circuit or load. The operating lever is released and the switch may be opened only when an interlock button is depressed. This operation actuates an auxiliary switch in the housing which is connected to trip the starting equipment in the circuit.

Long-life, silver-to-silver, embossed line contacts make maintenance of the new switch negligible. And the location of the operating shaft and interlock plungers in the top of the housing, protected by rain shields, eliminate the possibility of oil leaks. The oil gage is weatherproof.

The tank is finished with a high-quality grade of outdoor paint. Holes for lifting hooks are provided in the top plate, and the switch may be mounted on wall or framework.

Improved Lehigh Safety Boot

Bone-breaking falls are an estimated 18.2 per cent of all industrial accidents. To help reduce this hazard in the many plants where floors are dangerously wet and slippery, Lehigh Safety Shoe Co., of Allentown, Pa., last year introduced the "Par-Grip" safety boot. The sole is made in one flat piece from toe to heel, which doubles the normal traction area. In addition, the sole is moulded in a deep, diamond-shaped grid pattern forming dozens of tiny "suction cups" that grip wet floors like a rubber plunger.

This safety sole is available in knee-boot or ankle-boot models, black or white—all with the famous Lehigh armor-plate steel toe box built in for toe protection, and with a genuine leather insole to prevent the "burn" commonly caused by all-day use of rubber footwear. For use in plants where extreme grease and oily-floor conditions prevail, Lehigh also makes an all-neoprene boot without the "Par-Grip" safety sole construction.

New "Rapiduction" Lathe Announced by Oster

A new machine having a capacity of 1½-in. (round), for cutting off, boring, tapping, reaming, facing, threading, and many other jobs has just been announced by Oster Manufacturing Co., of Cleveland, Ohio. Designed primarily as a low-cost, manufacturing lathe for simple turning operations, the machine does not require highly skilled labor to operate it efficiently.

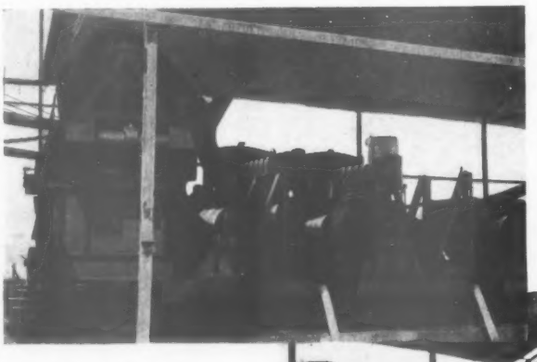
The spindle head is totally enclosed, carrying the spindle and worm shaft which runs in oil. The spindle runs on ball bearings and is built with American standard flanged-type nose. It is driven by a hardened and ground, steel-worm and bronze-worm gear. The worm shaft is also mounted on ball bearings. Multiple V-belts from the motor to worm shaft is the method of drive, speed changes being obtainable through quick-change sheaves giving spindle speeds from 140 to 1,000 r.p.m. A coolant pump, mounted in the base, is driven by a V-belt from the motor.

Mounted on the carriage with key and T-bolts, the tool post is provided with longitudinal adjustment for the length of the carriage. A variety of chucking equipment is obtainable including face plate, automatic and universal and either manual or automatic stock stop can be provided. Power is furnished by a 2-hp. 1,800 to 3,600 r.p.m., two-speed induction motor with reverse or electric braking optional. The machine has a swing of 13 in. over its bed and 6 in. over the cross slide.

The floor space required by the "Rapiduction" lathe is 33 by 70 in. without bar-feed extension. If bar feed is used, it extends 94 in. beyond the pan. The net weight of the machine is 1,386 lb.

RECENT WHELAND-LUCEY DIESEL ROTARY DRILLING INSTALLATION

Diesel-engine rotary-drilling equipment is becoming very popular for operating in territories where gas is not available and steam equipment is not economically desirable. There are many different hookups used usually based on the depth to be drilled and diameter hole required. In these Texrope drives, smaller engines and fewer ropes are used in the shallower work.



This Wheland-Lucey diesel-mechanical three-engine hookup, recently installed in South America, is designed for drilling to 12,000 ft. and is arranged for field transportation in sections. The engines are full diesel 200 hp. at 800 r.p.m. mounted on toboggan-type skid bases. These engines are air-starting from a small gasoline-driven compressor unit with reserve tank. The hookup is very flexible and permits compounding of the engines for driving either pumps or reverse clutch. The drive to the draw works is, of course, from the reverse clutch. Friction clutches are installed in sheaves where necessary. Belt tighteners are located between engines 1 and 2 and 2 and 3, and between engine 1 and reverse clutch. Pedestals are so designed that belts can be easily removed when it is necessary to take the equipment down for transportation. Power shafts are on self-aligning roller bearings.

The pumps are Wheland-Lucey HP-15000-AD 7¾ by 18 in., and are on ground level with the engines. They are driven from one sheave the shaft of which is connected to the two pump pinion shafts by three-piece chain couplings which permit operation of either pump as desired. Reverse clutch is supported on a substructure at derrick-floor level.

This equipment is handled for export by Lucey Export Corp., 3505 Woolworth Building, New York, and in the domestic fields by the Wheland Co., Chattanooga, Tenn.

Byron Jackson Develops Rotary Tong for Slim-Hole Drilling

A lightweight rotary tong, weighing only 136 lb., has been designed by Byron Jackson Co. for use in slim-hole drilling. This tong is made for drill pipe up to 2⅞-in. diameter and has a patented double bore which permits it to grip upon either the drill pipe or tool joint. The jaws are equipped with a narrow die and are so designed that they have continuous contact around the pipe which will not be crushed even when breaking out tight joints. The T-head spring latch closes automatically and the tong grips instantly when applied on the pipe or tool joint.

The BJ "Lightweight" rotary tong embodies all of the features of convenience and safety found in larger tongs, including the BJ Rollover lever whereby the tong can be reversed from "making up" and "breaking out" in 10 seconds' time without lowering or disconnecting the tong. To reverse the action of the tong, merely unhook one suspension rod, roll the tong over, rehook the rod to the handle, and the tong is in working position completely reversed.

Made in 2⅜ and 2⅞-in. sizes only. By changing the latch and latch lug jaw, the 2⅜-in. tong is easily converted for use on 2⅞-in. pipe. More complete information about the BJ "Lightweight" rotary tong may be secured from Byron Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles, Calif.

Airco Announces New Chart Electrode Selection

To simplify the selection of the proper electrode for the job at hand Air Reduction Co., 60 East Forty-second Street, New York, has announced the publication of an electrode-selector chart for use by arc-welding operators. Under separate guides, listed according to the metal to be welded, the chart enumerates such things as the suggested type of electrode, welding procedure, and recommended voltage and current values. Attractively designed, the electrode-selector chart is bound so that it can be hung either on the welding machine itself or on an adjacent wall within easy reach of the operator. Copies may be obtained by writing to Air Reduction Co.

TRADE LITERATURE

WESTINGHOUSE ELECTRIC & MANUFACTURING CO., East Pittsburgh, Pa., Dept. 7-N-20.—Bulletin 26-100, A new 12-page illustrated booklet giving valuable facts about welders and their operation. Covered in the booklet are motor and engine-driven welders, and bare-welding generators. Information contained includes dimensions, weights, and ratings for various types of machines. Application for each type is discussed, and a general description of each provided. Features of the "Flexarc" welder construction are explained, with photographs and cutaway sketches to aid the reader. Fourteen characteristic curves, covering all the general types, are a feature of this booklet, and give interesting data on welder operation. Complete gasoline engine specifications for welder prime movers are given. Optional and standard equipment are discussed, and on the last page there is a summary of the distinctive features and advantages of the "Flexarc" line—each with a brief explanatory sentence.

WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J.—Bulletin S-500-B39, describing its convertible gas-diesel engines Type EEGX and EEX.

HEWITT RUBBER CORP., Buffalo, N. Y.—Bulletin, "Hewitt Rubber Products for the Oil-Producing and Refining Industries," the second of three parts on its new general hose catalog. Specifications of its line of rotary, suction, flue-cleaning, steam, welding, and fire hose, transmission belting and industrial packings are given.

BROWN INSTRUMENT CO., Wayne and Roberts Avenues, Philadelphia, Pa.—Catalog 6706, covering the complete line of vapor-actuated, gas-actuated, mercury-actuated, and portable thermometers for indicating, recording, and controlling processing operations. Advanced design features such as rectangular case, powerful flat spiral actuating elements, overload safeguard, etc., are fully described.

BUCKEYE TRACTION DITCHER CO., Findlay, Ohio.—Bulletin covering its Models 48, 12-A, and 12 pipe-line trenchers. A description and specifications of each model are given.

COFFING HOIST CO., Danville, Ill. — Catalog G-3, giving illustrations, specifications, and prices of its complete line of hoisting equipment; including ratchet lever hoists, push-button control hoists, safety-pull hoists, chain hoists, electric hoists, and other types.

TAYLOR FORGE & PIPE WORKS, Box 485, Chicago.—Catalog 401, 216 pages, on the company's line of seamless steel pipe fittings for welded and forged steel flanges. Complete data are presented on design, pressure, and temperature ratings, and on flange bolting, new test analyses, accepted standards, etc. Prices and dimensions are shown for every fitting in the Taylor Forge line, including Weldells, tees, return bends, reducers, and caps, as well as all types of forged flanges.

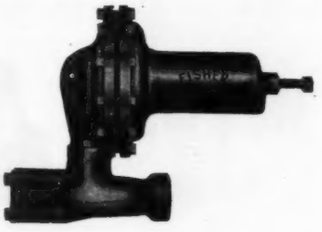
NORTON CO., Worcester, Mass. — 24-page booklet prepared as an aid in the design and construction of small laboratory furnaces suitable for relatively high temperatures. Its purpose is to help in the making of proper selections of refractory shapes and their advantageous usage. Detailed methods and design data are presented, and furnace assemblies described.

TEMPLETON, KENLY & CO., 1020 South Central Avenue, Chicago.—Junior Catalog No. 40, 60 pages, describing the construction, application, and giving specifications for the 300 plus sizes and types of Simplex jacks. Simplex automatic raising and lowering jacks, screw jacks, journal jacks, geared jacks, and more specialized jacks are covered.

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis.—24-page catalog describing its new HD-7 diesel crawler tractor. The following five main features of this 54-hp. tractor are emphasized: (1) Two-cycle diesel power; (2) balanced power and speed; (3) Bimetallic clutches and brakes; (4) new track-release mechanism; (5) "positive-seal" truck wheels.

Fisher Governor Introduces New-Type Regulator

Word has been received from the Fisher Governor Co., Marshalltown, Iowa, that they are now marketing their new Type 630 regulator. This new Fisher development is for high and intermediate gas-pressure reduction such as the primary reduction of pressure in farm taps from high-pressure transmission lines. Also highly recommended for general applications in refineries and gasoline plants. Features are:



Better regulation—pressure-loading feature built into the design of this valve makes it possible to automatically maintain the reduced pressure at the set point regardless of fluctuations in inlet pressure and increases in demand load.

Greater capacity—actual tests show this regulator to have greater capacity, size for size, than any other regulator of its type on the market today.

Two diaphragm assemblies—large and small diaphragm assemblies for reduced pressure ranges of 0 to 30 lb. and 25 to 150 lb., respectively, are available. They are interchangeable on all sizes.

The regulator is available in the following sizes and pressures: Sizes, 1, 1¼, 1½ and 2-in. with three orifice sizes, ¼, ⅝ and ½-in.. Suitable for inlet pressures up to 1,000 lb. per sq. in. and for reduced pressure range of 2 to 150 lb. per sq. in.

Bucyrus-Erie Appoints Texas Panhandle Distributor

Bucyrus-Erie Co., large manufacturer of cable-tool drilling rigs, announces the appointment of Murray Tool & Supply Co. of Texas as their distributor of oil-well drills for the Panhandle territory. E. C. Sidwell, head of the firm, has been an oil-well driller for some years and has, therefore, ample background to understand the many problems confronting oil-field operators in their work today. According to L. B. Birckhead, drill sales manager of the Bucyrus-Erie Co. at South Milwaukee, Wis., the firm is located at Pampa, Tex., and is under the supervision of R. C. Riggs, lately appointed southwestern representative.

"OILWELL" ROTARY DRILLING UNIT UTILIZES TORQUE CONVERTER

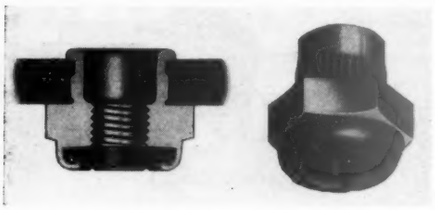
The No. CT-1715 rotary drilling unit, developed by Oil Well Supply Co., Dallas, Tex., is a compact and portable assembly on steel skids, providing a direct drive from an internal-combustion engine through a hydraulic torque converter and geared speed increaser to an "Oilwell" 17½-in. oil-bath rotary of modern, high-speed design. Smooth and flexible power flow like that of a steam engine, together with wide range of power and speed, is accomplished through the use of the hydraulic torque converter. The hydraulic drive cushions the shocks which are inherent in rapidly turning a long string of drill pipe in torsion, thus contributing not only to the life of the moving parts of the rotary and prime mover, but of the drill pipe and bit as well.

Whether the drilling requirement calls for slow table speeds as in coring operations or high table speeds ranging between 250 and 300 r.p.m., the drive responds through simply changing the engine throttle setting. The throttle is regulated by a convenient remote control at the driller's position, and there are no other controls nor are there any clutches. A unique feature of this rotary drilling unit is the vacuum brake, which absorbs the slight drag of the converter fluid when the engine is idling and thus prevents the table from turning when rotation is not desired.

This new rotary drilling unit gives to the rotary drive of an internal-combustion rig the many advantages for which the "Oilwell" rotary drilling unit equipped with a steam engine is so well known. It also increases the capacity of a multiple-engine rig by releasing the engines for slush-pump drive without connection to the rotary. In emergencies the hoist can be driven by the drilling-unit engine by means of a sprocket on the gear-box output shaft. Similarly, the rotary can be driven by a conventional chain drive from the hoist to a sprocket on the rotary pinion shaft if the drilling-unit engine is shut down.

Elastic Stop Nut of Knurled-Shank Type

For fastening sheet-metal assemblies in which the parts must be readily removed and returned to position, a clinch type of self-locking nut with knurled shank is offered by Elastic Stop Nut Corp., 2332 Vauxhall Road, Union, N. J. To install the nut, a hole is



drilled in the structure and the shank is pressed into the hole. The mouth of the shank is then spread against the back of the structure to effect a clinching hold. The knurling engages the drilled surface and thus assists in eliminating any turning of the nut.

The head of the nut is fitted with the vulcanized fiber collar which characterizes all types of elastic stop nuts. This collar, being unthreaded, resists the entrance of the screw, thus automatically taking up all thread play and bringing the load-carrying thread faces of nut and screw into a tight pressure contact. As the screw thread impresses its way through the collar, this pressure is maintained and increased to such a degree that the screw cannot work loose, even under the most severe vibration. Because of the resilient character of the fiber collar, the screw may be removed and replaced repeatedly without loss of the locking action.

These nuts are available in a complete range of sizes, thread systems, shank lengths, and materials.

M.S.A. Oxygen Recorder Now Assembled on Steel Panel

The M.S.A. oxygen recorder is now available completely assembled on a steel panel—greatly simplifying installation and permitting easy maintenance, announces Mine Safety Appliances Co. of Pittsburgh, Pa. The M.S.A. oxygen recorder is the most modern and scientifically accurate instrument for measuring and graphically recording oxygen in other gases, and is the only instrument of its type made in America. It precisely measures oxygen concentrations from 0 to 20.8 per cent and can be calbrated for any range desired within the above limits. All parts of the recorder are assembled on a steel panel measuring 30 in. wide and 7 ft. high.

Other advantages claimed for the M.S.A. oxygen recorder are: All conductors carrying sample and solution are of hard rubber; clear plastics are used instead of glass where transparency is required; unique construction of the electrical control box excludes corrosive gases; electrical parts and conductors are enclosed in explosionproof fittings; carbon dioxide and other acid gases can be removed from interference with operation, when necessary, by a caustic scrubber.

HOMCO Moves Into New Houston Headquarters

HOMCO cutting and fishing-tool service, a division of Houston Oil Field Material Co., Houston, Tex., has recently moved into new headquarter office and shop at 2101 South Wayside Drive, Houston. The building, containing 15,000 sq. ft. of floor space, is a modern brick structure designed for maximum natural light, and all offices are air-conditioned. The location contains 4.7 acres, giving HOMCO ample space for continued expansion.

This move represents a unique step for the cutting and fishing-tool organization since the modern shop, warehouse room for tools, and office allows the organization not only to do its own repair work, but to manufacture its own specialized cutting and fishing equipment. Manufacture of the HOMCO side-wall sampler and the new HOMCO jack-screw cementing packer is being carried on in the new, completely equipped shop. This modern setup enables the company to offer far better service than was heretofore possible.

Removal of HOMCO cutting and fishing-tool division to new quarters does not affect in any way the supply division or the specialty-tool-sales division of Houston Oil Field Material Co., which remain at 1524 Maury St., Houston, the space vacated by the cutting and fishing-tool division giving them much-needed room for expansion.

Coffing Hoist Moves Into Larger Quarters

Just 12 years ago, in 1928, the first and original ratchet-lever hoist was built in the small shop (measuring 12 by 18 ft.) of Coffing Hoist Co. at Danville, Ill., F. W. Coffing, president, has announced. The demand for this type hoist was so great that in 1930 the company moved into larger quarters. The continuous demand for Coffing ratchet-lever hoists and the development of other new equipment, including the Quik-lift electric hoist, the Power Master gravity lowering hoist, the two-cam actuated chain hoist and other types, has again necessitated the removal of this rapidly growing organization. The new quarters include its own factory and office building, modern in every respect and containing some 36,000 sq. ft. of floor space.

The new plant, together with added manufacturing equipment and the manpower that is being included among the personnel, will enable the company to increase production to better serve its distributors and the consuming industries, Mr. Coffing stated.

Stahmer Shoe Co. Announces All-Purpose Safety Shoe

A new and improved type of Davenport wood-soled safety shoe is being currently announced by the F. J. Stahmer Shoe Co. of Davenport, Iowa. According to O. G. Bargmann, general manager, this new Davenport wood-sole shoe is especially designed for use where ordinary leather-soled safety shoes do not offer sufficient protection.

In designing this shoe, careful attention was given to making it a comfortable shoe as well as a foot protection. Vamps and uppers are made of pliable, tough oiled grain leather. Sole leather is used for counters. Special felt insoles are thicker for added comfort. Wood soles of select close-grained maple have the correct rock from heel to toe for greater ease in walking. Thickness of sole at ball of the foot is 1 in. Heel thickness is 1¾ in. The top of the wood sole is specially cut to assure the maximum arch support.

Safety toes in these shoes are available in composition or steel. Composition toe resists pressure up to 600 lb. Steel toe resists pressure up to 4,000 lb.

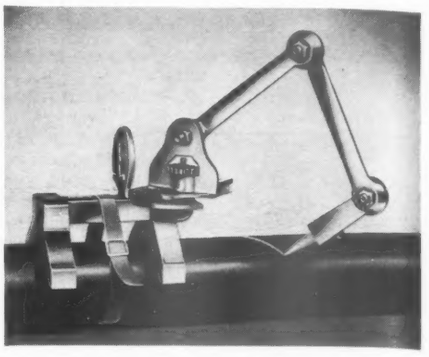
Texasteel's Expansion and New Equipment Program Announced

One of the largest expansion programs ever made by a southwestern manufacturing company is under way by the Texasteel Manufacturing Co., Fort Worth, Tex. Allen J. Armstrong, vice president and general manager, has announced that the large oil-well supply department of Texasteel will have its capacity greatly increased and new and diversified oil-well equipment will be added to Texasteel's established line of sucker rods and pumping equipment. A new and modern oil-well equipment store has been built at Odessa, Tex., to serve the oil industry in that area. Texasteel's store east of Kilgore is being enlarged and improved to take care of more business in the East Texas field and other nearby oil pools. Also, three stores will be built in other Texas areas to better serve them with the Texasteel equipment.

Texas Steel Co., the parent company of Texasteel Manufacturing Co., is also undergoing an expansion and enlarging program with new buildings and new machinery and tools for increased capacity being added. Modern metallurgical laboratories are being installed and talented steel experts employed. George W. Armstrong, Jr., is vice president and general manager of Texas Steel Co. George W. Armstrong, Sr., is president of both Texas Steel Co. and Texasteel Manufacturing Co., the original company having its inception in 1903 and the oil-well supply department being added in 1917.

Accurate Layouts on Pipe Allowed With Trumark Protractor

Accurate layouts for cuts at any desired angle, on pipe up to 3 in., rectangular forms, angle or T-shapes, are made instantly with the new Trumark Junior protractor. This instrument makes possible instant markings for torch cutting, sawing, shearing, or machining.



The Trumark protractor is used in aircraft plants, by public utilities, shipfitters, machine shops, pipe-line contractors, railroad shops, and by welders, in shop and field work. This marking device makes possible accurate layouts without the use of templates, wraparounds, or engineering computations, and can be used by anyone without previous experience or layout training.

For marking pipe, the Trumark is held firmly in place by the strap. Two levels show exact position for the instrument. The desired angle is set on the 180° scale and the flexible marking arm then scribes a line completely around the pipe. On any rectangular form, the instrument is held squared to the edge or corner, the desired angle is set on the protractor scale, and the line marked.

The plumb-bob indicator can be set either parallel to the instrument or at right angles, to show any desired number of degrees from a horizontal plane, for marking layouts along any shape. It also serves as a master level. The Trumark Junior is all die-cast, with marking arms held in true position by special fiber disks. These instruments are produced by the Tru-Line Corp., 6022 Wilshire Boulevard, Los Angeles, Calif.

Safety Cutout Protects Stationary Engines

Minneapolis-Honeywell Regulator Co., 2950 Fourth Avenue South, Minneapolis, Minn., has announced a new safety device designed to protect stationary internal-combustion engines by interrupting their operation if the lubricating-oil pressure drops hazardously low or if the cooling-water temperature rises too high. It provides an inexpensive insurance against costly damage to expensive engines and is particularly essential on engines that operate for long periods of time unattended.

Two models are available; the P607A with manual reset, and the P607B without manual reset. In order to start the motor when the "A" model is used the manual-reset button must be depressed until the motor starts and the oil pressure rises to normal. The "B" model is designed for use on motors with automatic starting equipment where a means is provided to shunt the circuit around the P607B until the motor starts and the oil pressure rises to normal.

Combining in one device the duties of two controls this unusual instrument has several distinctive features: (1) Universal application.—For engines with a distributor type of ignition the device is wired to break circuit on temperature rise or pressure fall. For engines with a magneto type of ignition the opposite terminals are used which short circuits the primary of the spark coil to the ground. For diesel engines the device is set up to control a solenoid valve installed in the fuel line to the injection system. (2) No manual reset latch to keep the reset button depressed while the motor is being started. (3) Small 4 by ½ in. temperature element capsule which can be inserted in any ½-in. pipe tapping in the block. (4) No separable well to install. A special packing gland is furnished. (5) A mercury switch handles the switching action. (6) Small overall dimensions, 6⅛ in. in height, 5⅞ in. in width, and 2⅛ in. in depth.

AMONG EQUIPMENT MEN...

W. K. Hanna Appointed Manager of Roebling's Pittsburgh Area

The John A. Roebling's Sons Co., Trenton, N. J., has announced the appointment of W. K. Hanna as manager of their Pittsburgh territory, which includes western Pennsylvania and certain areas in Maryland, Virginia and Kentucky.

Mr. Hanna began his business career as salesman for the Charleston Electrical Supply Co., Charleston, W. Va., and not long after, August 1919, entered the Roebling organization as sales representative for their complete line of wire rope, electrical wires and cables, woven wire and flat-wire specialties throughout southwestern Virginia and southern West Virginia. After gaining quite some prominence in his territory, Mr. Hanna was made assistant manager of Roebling's Philadelphia branch, a position which he held until his present appointment.

Kobe Appoints Harold Ihrig As Tulsa Representative

As part of a planned expansion program, Kobe, Inc., manufacturers of the Kobe hydraulic pumping system, has announced the appointment of H. K. Ihrig as Tulsa district representative with headquarters in the company's offices at 506 Kennedy Building. Mr. Ihrig brings to his position a well rounded experience in the Kobe system having been previously associated with the company's technical service work in both Kansas and Oklahoma City.

Mr. Ihrig attended the Missouri School of Mines and the engineering college at Oklahoma A. and M. After finishing his college work he became associated with the petroleum-engineering work of the Wilcox Oil & Gas Co., later going with the same department of the Phillips Petroleum Co. at Oklahoma City. In 1936 he joined the editorial staff of The Oil and Gas Journal. Later he became interested in the development of special equipment for the treating of emulsified crude oils and studied this problem in many fields throughout the Mid-Continent oil-producing states.

The appointment of Mr. Ihrig to his new position is part of the company's planned development and made particularly to meet the increasing demand for Kobe pumping systems.

BUSINESS NOTES

Charles P. Stanfield, who has served the Gulf Oil Corp. for the past 12 years in California and Venezuela, has left that organization to become associated with the export firm of Guy E. Daniels, 30 Rockefeller Plaza, New York City.

Egon Koehler, vice-president of the Mooriane Co., Tulsa, for the past 10 years, has resigned effective December 15 for the purpose of making a connection with the Alco Products Division of the American Locomotive Co. and taking charge of sales of heat exchangers and their allied lines in Tulsa territory. Mr. Koehler will make his headquarters in Tulsa and will carry on his new work in conjunction with the Power Machinery Co.

Ira E. Dugan has recently taken a position with Franks Manufacturing Co. of Tulsa. Mr. Dugan, who was chief geologist of Mariand Oil Co. at the time of its dissolution, was later chief representative of the Oklahoma Corporation Commission in the Fitts field. He has been acting as a consulting geologist and engineer during recent years.

John H. Walker, of Beaumont, Tex., has become a salesman for P&H welders and electrodes, manufactured by the Harnischfeger Corp., of Milwaukee, Wis. Mr. Walker will operate in Harnischfeger's Dallas, Tex., territory.

New York Chapter of Nomads Starts Spanish Lessons

With the characteristic progressive spirit exemplified by John H. Baird, president of the New York chapter, the Nomads will start a class in the instruction of Spanish to its membership beginning in December. Already 25 members of the organization have enthusiastically signified their intention to take instructions once a week throughout the year under the supervision of a competent Spanish teacher.

T. J. Costello With Maloney Tank Manufacturing Co.

The Maloney Tank Manufacturing Co. through its president, J. S. Warren, has announced the appointment of T. J. Costello as general sales representative in Tulsa. Mr. Costello comes to the Maloney company from the Parkersburg Rig & Reel Co. having been located at Houston. He has a wide acquaintance in the oil country, having been in the Parkersburg sales division for the past 15 years. He will add very materially to the Maloney sales organization, especially, in extending their sales territory.

Parkersburg Company Announces Pacific Coast Manager

The Parkersburg Rig & Reel Co. has announced the appointment of P. L. Brooks as Pacific Coast manager, effective December 1. Mr. Brooks will be in charge of sales in the states of California, Oregon, Washington, Colorado, Wyoming and Montana. Headquarters for the Pacific Coast territory will be maintained at Parkersburg's Los Angeles office at 4001 East Washington Boulevard. For the past several years Mr. Brooks has been located at Parkersburg's Dallas, Tex., sales office.

J. L. Mathieu of Schlumberger Returns From Europe

J. L. Mathieu, an official of Schlumberger Well Surveying Corp. has returned to the United States after an "extended vacation" in France. Mr. Mathieu, who sailed from New York in the summer of 1939 via clipper plane, recalls that the trip to Europe required only 24 hours but that the return voyage via Africa took approximately 3 months.

Ed Olsovsky Made Chief Engineer Of American Manufacturing Co.

Announcement is made by American Manufacturing Co. of Texas at Fort Worth, Tex., of appointment of Ed A. Olsovsky as chief engineer. Mr. Olsovsky, graduate engineer of Texas A. and M. College, has been associated with American for 5 years as assistant chief engineer. Olsovsky has authored and coauthored a number of technical papers interesting to oil-country readers. Two of these "Effect of Design and Direction of Rotation on Peak Torque of Pumping Units," and "Selection and Maintenance of V-Belt Drives," have been published in trade journals and pamphlet form.

IN ATTENDANCE AT THE A.P.I. MEETING IN CHICAGO

N. J. Clarke, vice president in charge of sales for Republic Steel Corp.; Shep Miers, district sales manager at Tulsa for Southwest Supply Co.; S. Miller Williams, Jr., president of Williams Brothers Corp.; Gordon Hess, district sales manager at Houston, Tex., for Republic Steel Corp.; and J. M. Schlendorf, assistant vice president in charge of sales for Republic Steel Co. as seen at the Chicago A.P.I. meeting.

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CRANE CO., oil possibilities, cheap fee land, 3 mi. E Ward Gulf-Western drilling. J. G. SMITH, 215 Littlefield Building, Austin, Texas.

EAST TEXAS Trinity sand wildcat starting. Close in leases afford you ten to fifty for one bets next sixty days. E. CROFT, PROCTOR, TEXAS.

OKLAHOMA OPPORTUNITY. I have and can get 100% leases under 1,500 ft. Outstanding opportunity for man with cash to join me developing unprorated proven leases. W. H. Haffey, Wright Bldg., Oklahoma City, Okla.

$4500 BUYS 7 oil and 4 gas wells; 15 to 20 direct offset locations; powers; Ideal for water flooding; 2 intake wells already drilled. H. W. MITCHELL, Osawatomie, Kansas.

FOR SALE—10 acres Johnston Co. Okla. NW ¼ of NW ¼ of SE ¼, Sec. 19, Twp. 2S, Range 8 East. $100.00 Barry, 3505 Legation St. NW. Washington, D. C.

Leases and Drilling Blocks

SPECIALIZED Geophysical investigations conducted for petroleum promise. In touch with many opportunities to and for development of drilling blocks. P. O. Box 364, Fort Worth, Texas.

PARTNER or private money to help me develop proven and semi-proven leases, drilling blocks, Jefferson County, Kansas. Wells up to 20,000,000 at 1400 feet possible with a market paying a good income. Address P. O. BOX 61, Perry, Kansas.

NEW MEXICO State oil leases bought and sold, also farms and ranches. Send for list. WM. C. UPHOFF, Box 1108, Santa Fe, New Mexico.

RESPONSIBLE Company wants to buy E. Texas producing properties. Give full details and price. Address Box A-264, The Oil and Gas Journal, Tulsa, Okla.

ILLINOIS Basin, Oil leases in several Counties. Must sell. Would contract some. Would trade some for Spudder. ELTON BECK, Herrick, Illinois.

LEASE for sale on 1000 acres Henderson County school land, Block No. 1, Jack County, Texas near Rathke well on J. Harrison survey. E. J. Shawver, Perrin, Jack County, Texas.

JEFFERSON County, N. E. Kansas, near new gas field, two tests predicted sure producers. Best buys in area, including offsets. Quick action necessary as 8-inch set in both wells. Wire or write
GENE HELM
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Paul Brown Bldg., St. Louis, Mo.

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REWARD for correct address of J. F. Dirickson, Homer Doupe, Henry Grady Guffee, E. J. "Swede" Severson, and Hilton B. Burton, oil field workers, and J. S. Feltis, lease broker and driller. Advise Western Union, Box A-266, The Oil and Gas Journal, Tulsa, Okla.

SUITABLE REWARD will be paid for location of R. J. Stone, oil promoter, and 1940 Buick Sedan and Glenn A. Jordan and 1939 Plymouth Coupe. Notify Automobile Claim Service, Tulsa, Okla. Western Union or phone 2-5959.

Situations Wanted

PETROLEUM Engineer, Geophysicist, and Geologist, with twelve years' experience; desires connection with a reliable oil company. Box A-241, The Oil and Gas Journal, Tulsa, Okla.

PETROLEUM Geologist with ten years' experience in surface and subsurface work in Mid-Continent, Gulf Coast and Rocky Mountain areas, desires connection with a reliable oil company.
Box A-267
The Oil and Gas Journal, Tulsa, Okla.

AVAILABLE Chemical Engineer with thirty-five years of technical, administrative and executive experience, mostly in the Petroleum Industry. Box A-263, The Oil and Gas Journal, Tulsa, Oklahoma.

SECRETARY—26, 5 years' experience, desires change. Go anywhere, prefer Houston vicinity. Box A-272, The Oil and Gas Journal, Tulsa, Okla.

PUMPER, 30 years' experience on all lines of field work, desires new connection. Box A-271, The Oil and Gas Journal, Tulsa, Oklahoma.

Help Wanted

WANTED: Man acquainted with producers to buy Thread Protectors. Must have pick-up truck. Excellent opportunity. Give full details about yourself in first letter. Box A-234, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Chemical or Petroleum Engineering Graduate with training in colloidal chemistry to engage in research work on bentonitic clays. Opportunity to pursue graduate work leading toward the doctorate. Reply Box A-261, The Oil and Gas Journal, Tulsa, Okla.

WANTED immediately, Machinist, refinery experience, capable and reliable, steady work, 90c hour, 40 hour week; give references in letter. Box 1011, Mt. Pleasant, Texas.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

Survey Service

REMEMBER EAST TEXAS
"When all other methods fail, employ my divining or dowsing method. If oil exists this method finds it. Faults, broken treacherous areas accurately defined. Our Watson #2 first producer Wilmington, Calif., field, located by this method. Not theoretical prognostications. . . . Approximate depths and thickness of sands given. I own production. Information to prospective operators, only. George Miller, 1548 Post, Torrance, California."

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press. 215 East Third St., Tulsa, Okla.

Geophysical Service

ATTENTION. Why not locate Oil? A dry structure is not profitable. Unless we locate the Oil and Gas for you you pay us nothing for the survey. Maps and written reports furnished free. A Direct Geophysical Method that you can understand. Write Gravitational Selector, 14957 Lakewood Heights Boulevard, Lakewood, Ohio.

MANY oil pools yet to be discovered. Analysis of soil is the most direct method. Employ the best and save money. Frank Pritchard, 610 Petroleum Building, Fort Worth, Texas.

FOR the three weeks ended November 30, 1940, one out of every three oil wells completed in Illinois was dry. The expressions, "another dry hole" and the "pool is ringed with dry holes," should not apply to your land. My method quickly eliminates territory of non-mineral formation. For information, address Box A-268, The Oil and Gas Journal, 105 West Madison Street, Chicago, Illinois.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
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1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

FOR SALE

One gasoline drilling rig with two 85 H.P. Waukesha motors and unitized draw works complete.

300 sets 3" A.P.I. tool joints.

10,000 Ft. 7" O.D. 26# seamless casing, once run.

15,000 Ft. 4½" O.D. seamless drill pipe equipped with both regular and full hole tool joints.

In addition to the above we have 20,000 Ft. of 6" screw line pipe in Oklahoma; also drilling rig capable of drilling to 6500 feet, complete stock of line pipe, casing, drilling and pumping equipment.

Wire, Write or Phone for Prices

Louisiana Iron & Supply Co.
Shreveport, La.

FOR SALE—USED BOILERS
3 90HP-225SWP Acme Oklahoma City
LUCEY PRODUCTS CORPORATION
TULSA

FOR SALE: At our Oklahoma City warehouse slightly used Cardwell KS DHS skid type oil well servicing unit equipped with DHK Waukesha motor. I. T. I. O. Co., Bartlesville, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

NOTICE — CABLE-TOOL CONTRACTORS. Save money; good used wire lines. All sizes up to 5,000 ft. long. See us before you buy. General Tool & Supply Co., P.O. Box 4387, Oklahoma City, Oklahoma.

One 7' x 12' two-door steel tool house. One 4-in-line roller bearing crown block with 36" manganese steel sheaves on 20" beams. A-1 shape. 1300 Ramsey Tower, Oklahoma City, Oklahoma.

TWO WELL SERVICING UNITS, one 30 and one 60 model Caterpillar tractors with Cardwell and Hopper winches respectively. A-1 condition, priced reasonably with terms. Paul Rutledge, 424 N. Cincinnati, Tulsa, Okla.

FOR SALE

30-TON S/G LIMA GASOLINE, 0-4-0 SWG. LOCO. NEW 1931, GOOD COND. ROLLER BEARING. Immed. Delivery. SEND US YOUR INQUIRIES FOR ANY KIND OF LOCOMOTIVES

IRON & STEEL PRODUCTS, INC.
13412 S. Brainard Ave.
Chicago, Ill.
"Anything containing IRON or STEEL"

FOR SALE: 1—No. 28 Star steam drilling machine 60' mast serial C 507, less tools, located near Wynona, cheap. I. T. I. O Co., Bartlesville, Okla.

WELDING Machines—Lincoln electric, gasoline driven, Buda motors, 200 amp., 400 amp. Some priced as low as $175; also machines for rent. C. S. Foreman Co., Warehouse, 1901 Armour Road, North Kansas City, Mo. NOrclay 4558.

INTEGRATOR — EMCO-McGAUGHV MAKE—IN GOOD CONDITION, ATTRACTIVE PRICE. U. & I. SUPPLY CO., JACKSON, MICH.

FROM REFINERY equipment we offer 1—ten thousand barrel riveted tank, 2—Scotch Marine Boilers, 2—6' x 40' Bubble Towers, 1—5' x 51' Bubble Tower, 2—5' x 40' Flash Towers, 300—4" Still Header Boxes, 1—6' x 96' Smoke Stack, 2—18 x5 x 18 Pumps, 1—10 x 6 x 24 Worthington Simplex Hot Oil Pump, 1—22 x 36⅜ x 6 x 24 Wilson Snyder Duplex Hot Oil Pump, 3—85 HP Diesel Engines, 1—Cracking Furnace, brick, castings, and structure, 1—Exhaust Steam Heater.
Box 1011 — Mt. Pleasant, Texas.

FOR SALE: 1—Ideco Portable Standard Rig suitable for drilling, pumping, or servicing, complete less motor. I.T.I.O., Bartlesville, Okla.

FOR SALE, liquid purification plant, capacity 6,000,000 cubic feet of gas per day, also 4 steel purifier boxes, capacity 6,000,000 cubic feet per day. All in excellent condition. Operation ceased November 1, 1940.
Box A-270
The Oil and Gas Journal, Tulsa, Okla.

COMPLETE 6500 BBL. TOPPING AND CRACKING PLANT
BARNSDALL REFINERY—OKMULGEE, OKLAHOMA
2500 BBL. KELLOGG CRACKING UNIT—4000 BBL. TOPPING
Will sell all or any part—Will quote "As is", Dismantled and loaded or Re-erected your site
"Send Us Your Inquiries"

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE: At Bartlesville 1—2A National Portable Drilling Machine Less Tools. I. T. I. O. Co., Bartlesville, Okla.

TRACTORS
Caterpillars, crawler type, size "35," $375; size "65" with nigger-head winch, $750; Caterpillar RDS with bulldozer, $2000; Allis-Chalmers Model L with bulldozer $1750. Guaranteed, slightly used. O. C. Evans, Mt. Sterling, Ky.

FOR SALE
ANY QUANTITY
NEW SEAMLESS STEEL COUPLINGS

300—4", 8 thread x 4⅝" long, Line at 55c each.
1000—13" O.D. (12½" Pipe) 8-V Thread x 8¼" long, Line at $1.65 each.
5000—1¼" Black Merchant Forged Steel, at 4c each.
5000—1½" Black Merchant Forged Steel, at 5½c each.

RECONDITIONED PIPE
30,000 feet 12", 50 lb. at $1.25 per foot.
100,000 feet 6" Std. at 38c per foot.
All of the above F.O.B. Philadelphia District, subject to prior sale. Pipe in lengths 18'0" and longer, plain ends.

EASTERN PIPE SUPPLY COMPANY
1424 N. NINTH STREET
PHILADELPHIA PENNA.

FOR SALE: 4—OCS Roller Bearing Chain Driven Sand Reels. I. T. I. O., Bartlesville, Okla.

FOR SALE OR MAY LEASE
COMPLETE
STANDARD DRILLING OUTFIT
ALL equipment is the latest type and is in first class condition. New 125 Diesel Caterpillar. This outfit is complete with fishing tools. Inquire Box 112, Jerome Hotel, St. Joseph, Mo.

FOR SALE: At Oklahoma City 2—set slightly used 6½" Spang Weldless drilling jars 4½" stroke 3¼"—4¼" box and pin, $100.00 per set. I. T. I. O., Bartlesville, Okla.

RECEIVER'S SALE
5 fully equipped producing gas wells, 6 producing oil wells, 3 equipped non-producing oil and gas wells. National Drilling Machine, tools and miscellaneous equipment. Leasehold rights on 174 acres. Room for Additional Development.
SALE — WEDNESDAY—JANUARY 15, 1941—1:00 P.M. on Premises 5 miles South of St. Clairsville, Ohio. For details write Carter Thornburg, Receiver, The Richland Developing Association, St. Clairsville, O.

YOUR dependable and cheapest source of supply!
Tank & Freight Cars; any kind
Tank & Freight Car Repair Parts; all kinds Locomotives; all types
Relaying Rails
Perhaps *we* can supply your requirements and—immediately!
OTHER MACHINERY AND EQUIPMENT TOO!
Destination inspection if desired!
IRON & STEEL PRODUCTS, Inc.
13412 S. Brainard Ave., Chicago, Ill.
"Anything containing IRON or STEEL"
Ask to be placed on our various mailing lists.

FOR SALE: At Bartlesville, Oklahoma, 1—50 HP Kewanee locomotive type boiler with stack 150# WP. Will pass state inspection. $200.00. I. T. I. O., Bartlesville, Okla.

REFINERY GATE VALVES
Reconditioned and Tested
STEEL and CAST IRON
O.S.&Y. Flanged and Screw End
ALL STANDARD MAKES
Largest Stock in Midwest
We save you half
West Tulsa Pipe and Supply Co.
L.D. 635 P.O. Box 1865
TULSA, OKLAHOMA

FOR SALE: At Bartlesville, Oklahoma, 1—set (2) 10" x 6' drilling bits 4 x 5 pin, good condition, $75.00. I. T. I. O., Bartlesville, Okla.

SMALL complete rotary. Longyear rotocore hoist. Derrick on truck. 7¼ x 10 G D pump. Two gas engines. Ready to drill less drill pipe. 109 N. Waggoner, Electra, Texas.

FOR SALE: In Oklahoma City field 50—1000 barrel BS&B VP used oil storage tanks, Cheap. I. T. I. O., Bartlesville, Oklahoma.

ONE 40 H.P. Type P.S. heavy duty Superior gas engine in A-1 shape. Has diesel attachments with straightway clutch, pump and lubricator. Wolfson Pipe & Supply Company, Wichita Falls, Texas.

Equipment Wanted

WANTED—USED TANK CARS
Interested in purchase of one or more not older than 1927-built class #4 tank cars with 50-ton trucks. Communicate Box A-265, The Oil and Gas Journal, Tulsa, Okla.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Mailing Lists

ROYALTY owners, Oil Investors, Unit holders, Stockholders in Oil and Royalty Companies. Personnel lists of every branch of oil industry. All by States. We buy lists. New catalogues ready. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the December 3 issue. All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.15
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.00

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

	Hill, California* Signal	Oklahoma, Kansas	Coast, Texas Gulf
14-14.9	$0.65	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	....	....
19-19.9	.69	....	$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.12
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.22
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective Feb. 1, 1940.

Crude-Oil Price Changes

Republic Oil & Refining Co. reduced posted prices December 5 from 1 to 20 cents a barrel in 10 fields in the Corpus Christi district of the lower Texas Gulf Coast.

Republic announced it would pay $1.13 a barrel for 40 and above gravity crude in the Saxet and Minnie Bock fields of Nueces County and in the Plymouth, Midway, and East White Point fields of San Patricio County. The new schedule calls for a 1-cent differential for each degree of gravity down to 93 cents a barrel for 20 to 20.9-gravity oil.

The company will pay $1.08 per barrel for 40 and above gravity oil in the Benavides, Longhorn, Southland, and Sweden fields of Duval County and the Heyser field of Calhoun and Victoria counties. This schedule, also, calls for a 1-cent differential for each degree of gravity down to 88 cents for 20 to 20.9-gravity oil.

Leonard Pipe Line Co. posted a $1.07 price for Winterfield grade (Clare County, Michigan) crude oil December 5. The posting is equal to Temple grade prices (Freeman-Redding).

Tank-Wagon Changes

(Continued from Page 104)

Socony-Vacuum Oil Co., Inc., advanced the tank-car and tank-wagon price of regular gasoline December 3 at Albany, N. Y., 0.2 cent per gallon. The tank-car price was advanced that day 0.3 cent per gallon at Portland, Me., Manchester, N. H., Burlington, Vt., Boston and Worcester, Mass., Hartford and New Haven, Conn., and Providence, R. I. The divided-dealer tank-wagon price was advanced 1.2 cents at Burlington, 0.3 cent at Boston, 0.5 cent at Worcester, and Hartford, 0.7 cent at New Haven, and 0.3 cent at Providence.

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